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STEEL

ESTABLISHED 1882

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PRODUCTION • PROCESSING • DISTRIBUTION • USE

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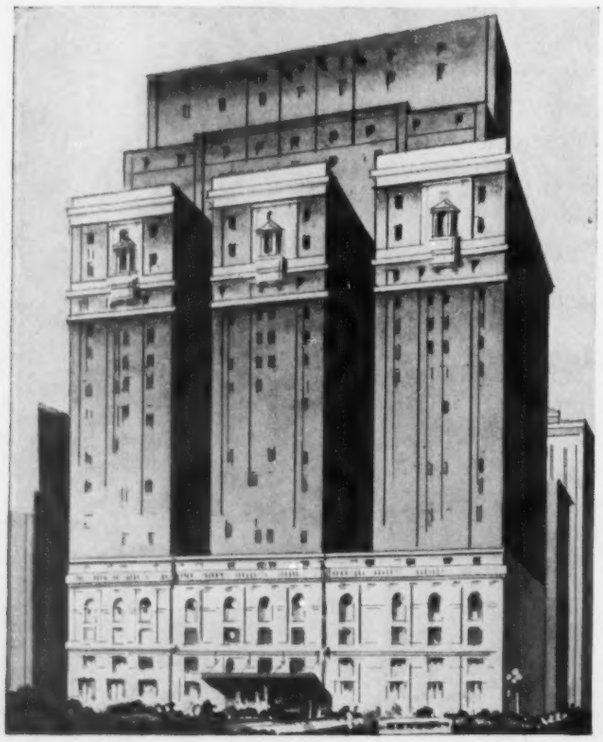

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As the Editor Views the News

■ STEEL production last week rose another 1½ points (p. 21) to 63½ per cent of ingot capacity, the highest rate since the fall of 1937. In general, business activity reflects gains and there is ample evidence (p. 15) that steel demand will be maintained at or slightly higher than the present volume for some months to come. Some economists fear that the business volume will taper off early next year because of curtailed government spending. On the other hand, STEEL has received some encouraging letters from well-known industrial leaders who are heartened by the record of the 1939 session of congress. Some, like M. L. Joslyn, president, Joslyn Mfg. & Supply Co., Chicago, advise of decisions (p. 9) to launch sizable plant expansion programs.

• • •

The machine tool order index advanced in July (p. 16) to the highest level since April, 1937. . . . The automobile industry (p. 29) sees close to 4,000,000-car year ahead. . . .

Employers Hit NLRB

Important development on the labor front (p. 18) is Ford Motor Co.'s defiance of the national labor relations board. It refuses to comply with a board order on the ground that it represented an invasion of the constitutional right of free speech. And Bethlehem Steel Co. (p. 17) now carries to the United States circuit court of appeals its effort to nullify the board's order requiring it to disestablish "company-dominated" employe representation plans. And the Michigan labor relations board (p. 20) threatens an appeal to public sentiment if power service is interrupted as a result of CIO-AFL rivalry.

• • •

At Washington a ways and means subcommittee soon will begin its tax study (p. 25) with a view to recommending a tax law aimed at helping business; representatives of industry are invited by the treasury department to submit their views so that they may be reported to the subcommittee. . . .

Tax Views Sought

On Oct. 24 the minimum wage rate will rise to 30 cents and the maximum work week will drop to 42 hours; the wage-hour law administrator now is preparing (p. 25) to "crack down" on violators. . . . To encourage small manufacturers of airplane parts, the army air corps (p. 27) recently has adopted the method of negotiating contracts. . . . The steel industry is preparing to tell its own story (p. 19) when the industry's hearings are opened Oct. 15 by the temporary national economic committee.

• • •

Col. R. R. Lutz, director, statistical division, National Industrial Conference Board Inc., is this week's contributor to STEEL'S Forum on Re-Employment.

Employment Analysis

He analyzes the factor of increased population (p. 36) and concludes that only by a long and sustained rise in business activity can still further increases in unemployment be averted. . . Numerous advantages are obtained (p. 38) with improved cartridge type bearings; chief feature is an in-built seal which insures adequate grease supply and which prevents grease contamination in event the equipment is disassembled for servicing. . . . Built-in materials handling devices are notable features of some recently constructed large presses (p. 42); they speed production and permit a larger return on the investment in these units.

• • •

Numerous advantages result from utilization (p. 45) of potentiometer control in the operation of pickling tanks. Maintenance costs are reduced, the solution is held within 2 or 3 degrees Fahr., power costs are lowered, damage from accidents is lessened and better pickling is had at higher speeds. . . .

Pickling Cost Cut

Recent developments in buttwelding strip steel coil ends (p. 48) have made it possible for the resistance welding method to approach closely the speed of stitching. . . . Much progress has been made of late with liquid carburizing baths. They produce cases of desired depth (p. 51), with little distortion. . . . Diesel engine drives at a scrap baling plant (p. 56) have reduced power costs more than half. . . . Hydraulic extrusion press for the Russian government (p. 46) is rated at 4500 tons.

E C Kreutzberg

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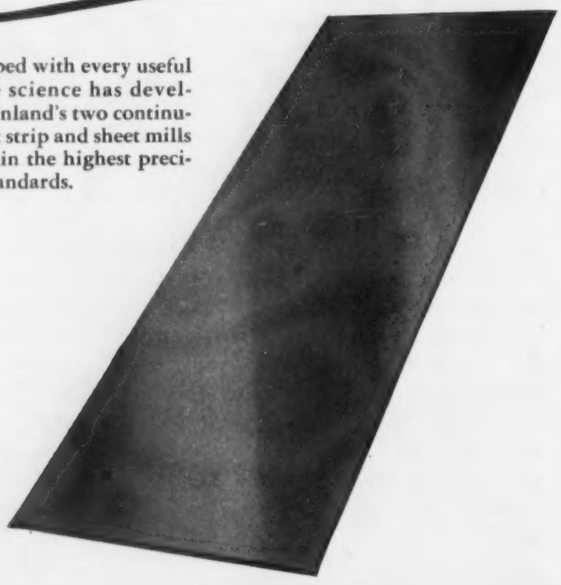

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ROUNDED STRENGTH PRESAGES SUSTAINED OR IMPROVED BUSINESS THROUGH 1939

By W. G. GUDE
Associate Editor, STEEL

■ BUSINESS has followed the recovery road for three months. During the past 90 days a number of indexes have turned upward, some of them sharply when allowance is made for the seasonal factor.

Improvement has been insufficient in duration or extent to indicate conclusively the start of what may be considered a boom. Nevertheless, so far as steel in particular and the metalworking industry in general are concerned, ample evidence is available to suggest a maintenance or further improvement in current activity during the remainder of the year. Beyond 1939, however, a question mark looms large.

Steelmaking has increased about 40 per cent from the 1939 low attained the middle of May. To what extent the upturn has been contrary to the seasonal trend is difficult to determine for the reason that the trend line of pre-depression years no longer prevails. In the six years 1924-1929 steel ingot production from May to July showed an average decrease of a little over 10 per cent. August marked an upward turn to stand only 5 per cent below May output, but not even October, peak month of the second half, recorded an average rate equal to that of May.

Production Pattern Changed

In general, the common pattern for steelmaking prior to 1929 included a first quarter rise to the year's peak in March, a decline to the year's low in July, recovery the following three months and a letdown in November and December. The depression changed all this, operations dropping steadily from early 1930 until after the middle of 1932, except for short-lived spurts in the first quarter of 1931 and 1932. The seasonal factor had no noticeable effect on demand during other periods of the year.

Likewise, several succeeding years had rising trends in steelmaking which far outdistanced that which might be expected on the basis of the average pattern of the pre-depression period. In the second half of 1935, for example, output expanded 40 per cent from July to December; a 5 per cent rise would have been considered normal prior to 1929. In 1936, operations rose with only a few interruptions thoughout the year; extended the rise the first five months of 1937; faltered the next four months and then crashed downward in what was probably the sharpest collapse in history.

Weekly Average Ahead

Weekly average production this month apparently will be about 28 per cent ahead of that of May, the month in which the downward trend was reversed. Last year the low month was June, and September showed an average rate 62.5 per cent higher. The other year in which unusually sharp recovery occurred the second half was 1935, when July marked the bottom. Improvement the ensuing three months amounted to 33.5 per cent.

Considering that steelmaking recently has been on a substantially higher plane than in either 1938 or 1935, the industry's comeback since May compares favorably with recovery periods of prior years, even though allowance be made for several factors which tended either to depress operations the first half of the second quarter or to quicken activity lately. These circumstances are the soft coal strike last April and the advanced date of new model introductions by the automotive industry.

What of the remaining four months of 1939? Viewing only the remainder of this year and neglecting the possibility that European developments might disrupt affairs at home, prospects for industrial production appear moderately good. From the earnings standpoint, steel seems destined to experience another unsatisfactory half-year, with industry as a whole probably doing little if any better than in the first half but substantially improved compared with 1938. Some steel users, however, appear likely to make a better showing for the second half.

Steelmaking will lean heavily on automotive requirements in coming months, and support from that direction will be increased somewhat by the switch to new models at an earlier date than usual.

For several weeks miscellaneous steel users have accounted for more than their normal proportion of total demand. This share will be reduced by the increase in automotive operations but gives indications of being sustained in tonnage.

More Steel for Railroads

Railroads are likely to call for more steel rather than less the next few months. The recent low level of demand from the carriers and need for additional equipment to meet the indicated fall upturn in freight traffic suggest at least a small increase in car building and repairs.

Heavy shipments of structural shapes and concrete reinforcing bars remain to be made against existing and prospective contracts, despite a slowing down in inquiries for large

building and engineering projects.

Shipbuilding, both for the navy and private lines, will continue active the remainder of the year, giving further impetus to plate and shape production.

All-time high backlogs of the aircraft industry and near-record orders of machine tool builders will provide moderate though important outlets for certain steel products. Alloy steels also will continue to find a market in other types of armament work.

Farm cash income is running slightly below 1938, and low prices for grain and livestock are a depressing factor, but reasonably active operations by farm equipment builders, particularly tractor interests, are in sight for late summer and fall. Producers look for good demand for merchant wire products from rural areas.

Line pipe business recently has been fairly brisk. Additional orders are in prospect, and, together with current backlogs, will contribute to the maintenance of steelmaking. Standard pipe demand will continue to benefit from the improved volume of residential building compared with 1938, although the margin this half may be reduced from the gain shown the first six months.

Sum of these factors connotes at least the retention of mid-year gains in steelmaking, if not additional small improvement before December.

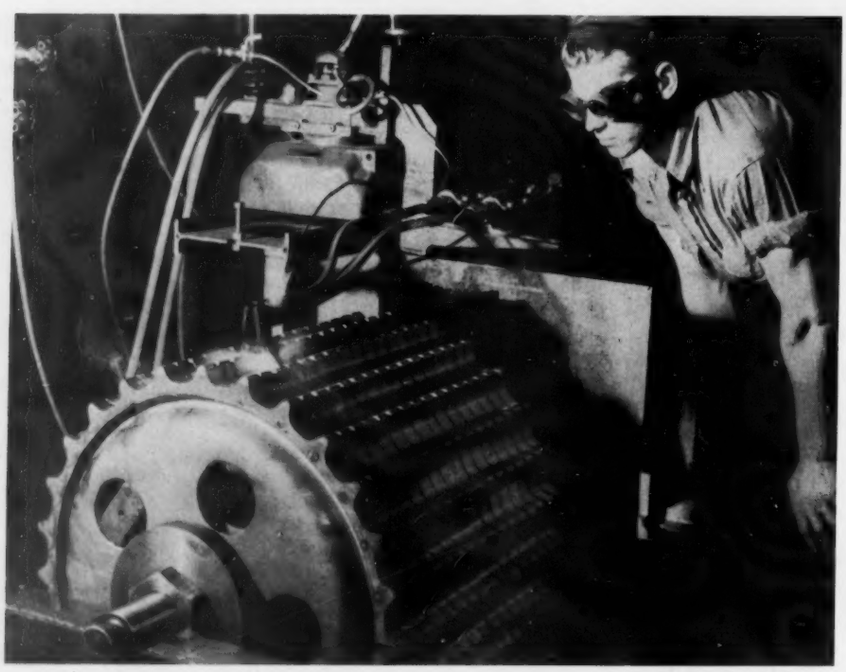
Steel production now stands a little more than half-way between the 1938 and 1937 levels. The suggestion that recent recovery is a prelude to substantially higher levels, such as the 1936-37 pace which followed the comeback of late 1935, must overcome at least one important obstacle to be accepted. This is the effect on business a few months hence of the tapering in federal expenditures. Commenting last week on this development, Col. Leonard P. Ayres, Cleveland economist, stated:

"Our economic system requires a steady inflow of new funds in order to sustain its functions of supplying goods and services and providing employment. Under normal conditions it gets these funds largely from its own business savings and from the sale of securities to investors. In recent years its savings have been meager and its sales of securities have brought in little new money. The flow of pump-priming expenditures has provided an expensive and inefficient supplement to the reduced contribution from business, but under the prevailing conditions of business it has been a highly important supplement. If important decreases in federal spending develop in the coming months before private enterprise steps up its expenditures sufficiently to compensate for them, business activity will be adversely affected.

"Deficit spending by the government should be tapered off, but the process should be accompanied by effective measures for increasing the spending of private business through removing existing barriers against the chances for profit."

While this situation is without major effect on the immediate prospect for steelmaking, it, together with uncertainty regarding political developments in the coming election year, make accurate analysis of the 1940 outlook virtually impossible at this time.

Flame Hardens 16 Sprockets at a Time



■ **Teeth of 16-rear-drive sprockets for tractors are flame-hardened 16 at a time. To do this successfully nested parts must be clamped tightly together, since any space between the parts would result in a nonuniform case. Sprockets are 26⅛ inches in diameter, have 27 teeth, are made of SAE 1045 steel. Hardening is performed with two diametral pitch gear-hardening heads attached to blowpipe driven by a cutting machine. Speed of 7 inches per minute produces a ⅛ to 3/16-inch depth of case having a hardness of 70 scleroscope. Photo, The Linde Air Products Co.**

July Machine Tool Orders Highest Since April, 1937

■ Machine tool orders in July were the highest for any month since April, 1937, according to the National Machine Tool Builders' association, Cleveland. Association's index rose to 230.9, the third consecutive month it has exceeded 200, and brought the three months' average above 200 for the first time since the first half of 1937.

Although sustained foreign demand accounts for approximately half the total volume, gradual improvement in the distribution of orders throughout the industry indicates a broadening domestic demand. Domestic volume, however, still is considerably under that of 1937, or even under 1936 when domestic orders accounted for 75 per cent of business placed.

How business has improved since the 1938 low:

1938	Monthly Index	3 Months' Average
May	66.7	88.0
June	70.2	75.7
July	89.6	75.5
Aug.	120.9	93.6
Sept.	117.4	109.3
Oct.	118.1	118.8
Nov.	112.2	115.9
Dec.	146.5	125.6
1939		
Jan.	150.8	136.5
Feb.	167.1	154.3
March	185.4	167.8
April	155.6	169.4
May	219.8	186.9
June	211.6	195.7
July	230.9	220.8

■ Tennessee Coal, Iron & Railroad Co. has awarded to the Rust Engineering Co., Pittsburgh, a contract covering excavations and concrete foundations for a central ore conditioning and sintering plant to be built at Wenonah, Ala., division of its Red Mountain ore mines. New plant is expected to be ready for operation within a year.

Bethlehem Challenges NLRB Ban on 21-Year Old Representation Plan

■ BETHLEHEM STEEL CO. last week petitioned the United States Circuit Court of Appeals to set aside national labor relations board order requiring it to disestablish "company-dominated" employe representation plans.

Board's order directed the firm's 21-year old employe representation plan be dissolved at plants in Lackawanna, N. Y.; Sparrows Point, Md., and Johnstown, Lebanon, Bethlehem, Rankin, Fleetsdale and Steelton, all in Pennsylvania. Ruling was based on complaints filed by CIO's Steel Workers' Organizing committee following the 1937 "little steel" strike.

NLRB found Bethlehem innocent of other charges that it had: Induced employes not to join the CIO union; conducted a "back-to-work" movement in unlawful manner; interfered with peaceful picketing by strikers; caused unionists to be attacked.

Case probably will be carried to the Supreme Court by either NLRB or the company and result in testing the board's powers under the Wagner act, impartial observers believe.

In protesting the decision Bethlehem contended it had been denied a full and fair hearing, asserted the alleged violations had no effect upon interstate commerce and NLRB's application of the labor law in the case was therefore unconstitutional.

It charged Examiner Frank Bloom's conduct of the hearing "was arbitrary, capricious and unfair, and resulted in awarding preferential treatment to the board."

Grace Speaks for Firm

Company's position as stated by Eugene G. Grace, president:

"We have no alternative except to do our utmost to protect our employes in the right guaranteed to them by the national labor relations act to freedom in self-organization and to bargain collectively through representatives of their own choosing," Mr. Grace said.

"Our company policy is simply stated. The wishes of our employes are paramount. They can have any collective bargaining organization they want and we will bargain collectively with it. We believe, however, that our employes should be protected from being forced by any one to accept an organization they do not want.

"This case was instigated by leaders of the CIO in a deliberate attempt to destroy the collective bargaining organizations of the employes at our plants, which have existed for over 20 years.

"We believe that under the act neither the labor board nor the CIO has the right or the power to deprive our employes of the right to bargain collectively through organizations freely chosen by them. The board's decision, if enforced, would do just that. For that reason we have petitioned the court to set aside the board's order. In the meantime, pending the court's decision, we shall continue to bargain collectively with our employes just as we have been doing.

Free Organization Fundamental

"We have recognized for over 20 years the right of our employes to have their own collective bargaining organization. That right we believe to be as fundamental as the right to work. We are in full accord with the principles of the national labor relations act, which are that 'employes shall have the right to self-organization, to form, join, or assist labor organizations, to bargain collectively through representatives of their own choosing.' We believe that under those principles the employes have the right to have their own independent collective bargaining organizations, if they so choose.

"It is apparent from the board's decision, and it has been apparent throughout the proceedings before the board, that in spite of the fact that the overwhelming majority of our employes desire to continue to be represented for collective bargaining by their existing organizations, the board will not permit them to do so.

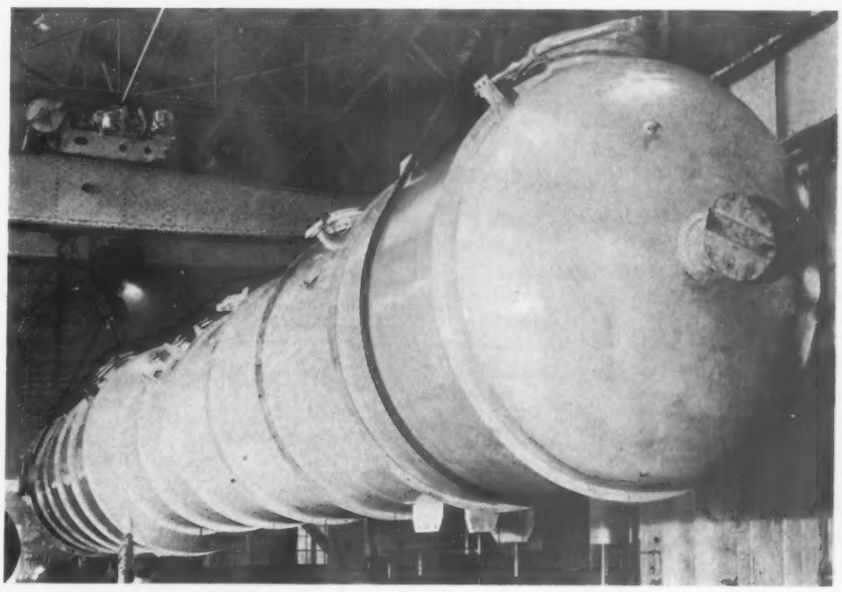
"As long ago as 1918 the company, in co-operation with the United States government through the war labor board, worked out with its employes the plans for collective bargaining which are in effect at the Bethlehem plants.

"Those plans have operated as effective collective bargaining agencies continuously from the beginning and, because of them, industrial peace has been maintained. Average wages and working conditions are as good or better than those of the other major companies.

"Under their plans, which are entirely self-supporting, the employes have chosen their representatives each year in elections conducted by the employes themselves by secret ballot without interference or coercion of any kind. In the elections in the years 1937, 1938 and 1939 over 96, 93 and 95 per cent, respectively, of the available employes voted for the plans.

"That the employes believe their

Oil Refining Tower Shipped to France



■ **Seventy-four feet long and more than 10 feet in diameter, this evaporator bubble tower is being shipped from A. O. Smith Corp.'s Milwaukee plant to Gonfreville, France. Built in accordance with American Petroleum institute and American Society of Mechanical Engineers codes, the tower is stress-relieved and lined throughout with chrome alloy sheets to resist attacks of corrosive crudes**

plans to be effective collective bargaining agencies and desire to continue with them is further shown by the fact that their organizations amended the plans to conform to the national labor relations act and through their counsel intervened in the proceedings before the board in order to defend the plans. The employes took that action notwithstanding the fact that the company, in order to conform to the act, had withdrawn all financial or other support of the plans."

Mr. Grace asserted CIO leaders instigated the case to force employes into their organization. Bethlehem's contributions to the Johnstown Citizen's committee during the strike there, to which the board referred, were made, he said, solely to enable local authorities to protect life and property in the face of efforts to terrorize the community. Mr. Grace denied the board's allegation that the management's statements concerning merits and operation of existing employe organizations evidenced company domination.

"Such findings on the part of the board show the extent to which the board is willing to go in its attempt to stifle free speech and to destroy collective bargaining organizations which have existed for many years and which the employes have shown that they desire to continue. . . . .

"We believe that under the national labor relations act the employes have the right to decide for themselves what form of collective bargaining organizations they shall have and that neither the labor board nor the CIO can deprive them of that right, and that under the act we are bound to continue to deal with the organizations which the employes at our plants have freely chosen to represent them. Unless those principles are observed, fair and just relations between employes and employers in this country cannot be maintained."

FORD REFUSES TO COMPLY WITH LABOR BOARD ORDER

Ford Motor Co. has notified the national labor relations board it will not comply with an order which the board issued against it a week ago, and charged the right of free speech is being denied to Henry Ford.

In reply to the labor board which recently reaffirmed an earlier ruling the company was guilty of violating the Wagner act, P. R. Martin, Ford vice president, denied the company had discharged members of the United Automobile Workers union or otherwise intimidated them.

"It appears to be the purpose of the board to prevent Mr. Ford and the Ford Motor Co. from expressing any opinion which may 'disparage' or 'criticize' any labor organization," Mr. Martin said.

MEETINGS

N.I.A.A. SPONSORS NATIONAL ADVERTISING CONFERENCE

■ NATIONAL Industrial Advertisers' association will hold a national conference in Hotel New Yorker, New York, Sept. 20-22, under sponsorship of the Technical Publicity Association of New York and Industrial Marketers of New Jersey. The program will include general sessions and 11 clinics in which industrial marketing problems submitted by members will be analyzed by experts. Industrial advertising, supplies and services will be exhibited. National Industrial Advertising association consists of 18 chapters in leading industrial centers of the United States and Canada, with membership of 1300, representing every line of industry manufacturing technical products. Roger Wensley, president of G. M. Basford Co., New York, is chairman of the program committee. Stanley A. Knisely, Republic Steel Corp., Cleveland, is president of the association.

BRITISH STEEL INSTITUTE AUTUMN MEETING IN WALES

Autumn meeting of the British Iron and Steel institute will be held in Cardiff, Wales, Sept. 12-15. Headquarters will be at the South Wales Institute of Engineers. The program includes technical sessions and plant visitations. K. Headlam-Morley, 4 Grosvenor Gardens, London, S.W.1, is secretary of the institute.

REVEAL PLANS FOR BRITISH-AMERICAN ENGINEERS' MEET

Dedicated to the theme, "Engineering Aids World Progress," the British-American Engineering congress, in New York, Sept. 4-8, will feature presentation of technical papers describing progress in transportation, highways, city planning and construction. The congress, first of its kind to be held in New York, will embody the fall meeting of the American Society of Mechanical Engineers, held jointly with the Institution of Mechanical Engineers of Great Britain, and the fall meeting of the American Society of Civil Engineers, held jointly with the Institution of Civil Engineers of Great Britain and Engineering Institute of Canada.

Among papers at the mechanical engineering sessions at the Engineering Societies building will be: "Transatlantic Air Transport," by A. Gouge, general manager and engineer, Short Bros., Rochester, England; "Trend of Air Transportation," by E. T. Allen, director of aerodynamics and flight research, Boeing Aircraft Co., Seattle; "Motor Transport," by E. C. Ottaway, technical officer, London Passenger Transport board, London; "Problems in Design and Operation of Merchant Vessels," by Robert C. Lee, executive vice president, Moore-McCormack Lines, New York; "Light-Weight Passenger Trains," by W. A. Stanier, chief mechanical engineer, Midland & Scottish railway, London; and "Light-Weight, High-Speed Trains," by C. T. Ripley, chief engineer, technical board, Wrought Steel Wheel Industry, Chicago.

A banquet will be served at the Waldorf-Astoria, Sept. 6. Speakers scheduled are: Dr. Nicholas Murray Butler, president, Columbia university, New York; Dr. Charles E. Inglis, professor of engineering, Cambridge university, England; Charles D. Howe, Canadian minister of transport, Ottawa, Canada; and Dr. Gano Dunn, president, J. G. White Engineering Co., New York.

Engineers' day at the New York World's fair will be observed Sept. 8, when the five engineering institutions will confer honors on distinguished engineers of Great Britain, Canada, and the United States. Charles F. Kettering, president, General Motors Research Corp., Detroit, will make the chief address, "Have Engineering and Science Gone Too Far?"

Convention Calendar

Aug. 24-25—American Hot Dip Galvanizers association. Semiannual meeting at Hotel Statler, Cleveland. Stuart J. Swensson, 903 American Bank building, Pittsburgh, is secretary.

Aug. 28-29—Institute of Scrap Iron and Steel Inc. Midyear meeting in Cleveland. Edwin C. Barringer, 11 West Forty-second street, New York, is executive secretary.

Aug. 28-31—American Mining congress. Sixth annual metal mining convention and exposition of Western division at Salt Lake City, Utah. Julian D. Conover, 309 Munsey building, Washington, is secretary.

Aug. 30-Sept. 2—Conference on Industrial Relations. Twenty-second annual conference at Silver Bay, Lake George, N. Y. E. H. T. Foster, 347 Madison avenue, New York, is executive secretary.

Sept. 4-8—American Society of Mechanical Engineers. Joint meeting with Institution of Mechanical Engineers (British) at Engineering Societies building, New York. C. E. Davies, 29 West Thirty-ninth street, New York, is secretary.

Sept. 8-9—American Ceramic Society. Fall meeting of Refractories division at Oakland Beach hotel, Conneaut Lake, Pa. Ross C. Purdy, 2525 North High street, Columbus, O., is secretary.

Sept. 12-15—Iron and Steel institute (British). Autumn meeting at South Wales Institute of Engineers, Cardiff, Wales. K. Headlam-Morley, 4 Grosvenor Gardens, London S. W. 1, is secretary.

Sept. 14-15—Lake Superior Mining institute. Annual meeting at Gogebic Country club, Ironwood, Mich. C. J. Stakel, Ishpeming, Mich., is secretary.

Commercial Practices Seen Focus Of Steel Hearings Before TNEC

NEW YORK

■ STEEL is preparing to tell its own story when the industry's hearings are opened Oct. 15 before the temporary national economic committee.

At preliminary hearings last winter the federal trade commission presented its steel case and only its side of the case was heard. Although FTC criticized at length the basing point system and charged the steel industry was a "focal center of monopolistic infection, which if not eradicated may well cause the death of free capitalistic industry in the United States," producers did not care at that time to offer rebuttal testimony.

In recent months steelmakers have been supplying a vast amount of detailed information to the commission and the department of justice, which are co-operating with TNEC in its present penetrating investigation as to whether practices in the industry are monopolistic in character. At the same time they have been doing some investigating of their own and may disclose the results during coming sessions.

It is indicated the hearings will bear largely on commercial practices—including the basing point system and other phases of pricing, costs, production and distribution. Any extended inquiry into financing, corporate structure or patents is believed unlikely. However, charges of price collusion are considered a possibility. Points raised are anticipated as broad in scope, pertaining to the industry as a whole and not to practices of individual companies.

Leaders May Testify

Probably a dozen or so leaders in the industry, together with a representative group of steel consumers, will be called to testify. Inquiry may center around a fixed list of questions for each group—producers and users—bearing upon social and economic as well as purely business aspects.

Since investment banking is scheduled to be heard Nov. 1 it is assumed the steel hearings will not last longer than a fortnight. In view of the FTC's earlier attack, "fireworks" are likely to mark the hearings, particularly in event the committee wants some further public demonstration justifying the time and money it has expended.

In connection with the investigation both FTC and the justice department have been gathering data through questionnaires and by sending agents to steel companies. So extensive has been scope of the probe that certain producers have opened their files to federal agents rather than risk public reprimand by inadvertently overlooking something the committee may later deem important. Companies having been asked to produce records bearing on public policies, some concluded it was safest to simply turn over all their records and files for examination.

Last May during its inquiry into impediments to the flow of investment capital into private enterprise, TNEC heard Edward R. Stettinius Jr., board chairman of United States Steel Corp., testify on the corporation's financing policies.

Scrap Institute To Hold Golf Tournament Aug. 29

■ More than 30 trophies and prizes will be awarded players in the national golf tournament of the Institute of Scrap Iron & Steel Inc. at the Beechmont club, Cleveland, Tuesday, Aug. 29.

Charles H. Lipsett, publisher, the *Waste Trade Journal*, has offered a cup for the low gross score. The President's cup will go to the low net player.

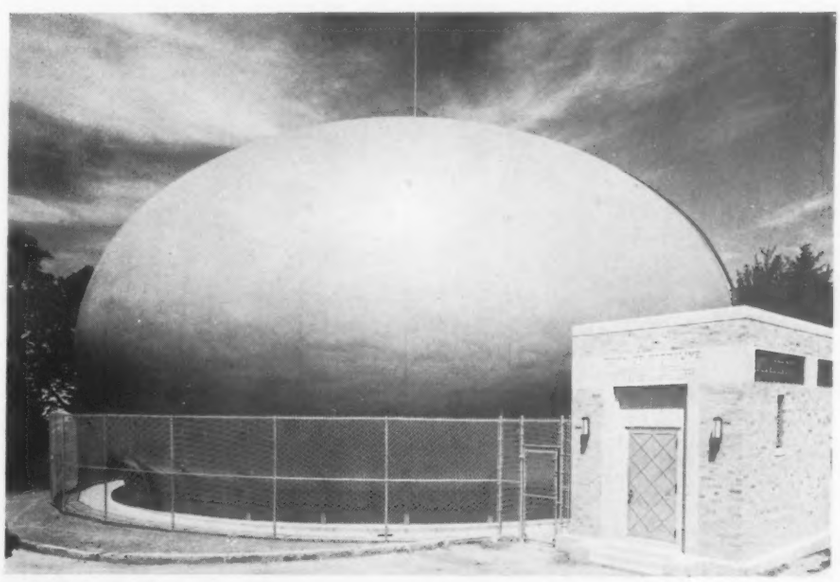
Prizes including portable radios, electric razors, electric roasters, golf and duffle bags, have been donated by a number of suppliers to the scrap industry including Doelger & Kirsten Inc., American Shear Knife Co., Linde Air Products Co., Canton Foundry & Machine Co., Cutler-Hammer Co., Burdett Oxygen Co., Air Reduction Sales Co., Logemann Bros. Co., Electric Controller & Mfg. Co., and Compressed Industrial Gases Inc. Approximately 20 prizes have been donated by institute directors and officials.

July Industrial Truck Shipments Above 1938

■ Shipments of electric industrial trucks and tractors during the first seven months this year totaled 479 units against 550 in the corresponding period of 1938, reports the department of commerce. Of 1939 shipments 446 units were to domestic buyers, 33 for export.

July shipments amounted to 69 units, compared with 41 last year. New orders during the month totaled 138, while during July, 1938, new orders were but 40.

Eye-Pleasing Spheroidal Water Tank



■ **Spheroidal design was adopted for this water tank at Brookline, Mass., to provide large capacity within relatively low range in head and attain the pleasing appearance necessitated by its location in a restricted residential district. Built by Chicago Bridge & Iron Co., Chicago, tank has 1,660,000-gallon capacity, required 190 tons steel. Its plates were phosphoric pickled to remove mill scale (STEEL, May 22, p. 58), permitting immediate painting**

Steel: Labor, $1; Owners, 8 Cents

■ RETURN on the steel industry's investment in the first half was at a rate of 1.06 per cent, against average annual return of 2.4 per cent over decade 1929-1938, and 5.1 per cent in 1919-1928, according to the American Iron and Steel institute.

Net earnings, after all charges but before dividends, aggregated $25,450,000 in the first half. After payment of approximately $19,000,000 on preferred, net was reduced to $6,450,000, a sum substantially less than the accumulated and still unpaid arrearages on preferred stock of some steel companies.

Approximately $55,000,000 in federal, state and local taxes were paid, or 20 per cent more than in first half of 1938. Taxes paid were equivalent to a full month's pay for 390,000 employes and to $3.70 for each ton shipped to customers during first half period.

More than $17,100,000 represented taxes on payrolls under social security laws.

Total amount of dividends paid to the industry's 519,000 stockholders represented 8 cents for each dollar paid to steel wage earners.

♦ ♦ ♦

DIVIDENDS DECLARED

Keystone Steel & Wire Co., Peoria, Ill., 15 cents a share on capital stock, payable Sept. 15 to record Aug. 31. This is the first dividend to be declared in the current fiscal year which began July 1.

American Forging & Socket Co., Pontiac, Mich., 12½ cents a share on outstanding stock, payable Sept. 1 to record Aug. 25.

International Harvester Co., Chicago, quarterly of 40 cents on common, payable Oct. 16 to record Sept. 20.

Pullman Inc., Chicago, 25 cents a share, payable Sept. 15 to record Aug. 25.

Chicago Flexible Shaft Co., Chicago, quarterly of $1.25, payable Sept. 30 to record Sept. 20.

3200 in Weirton Caravan See New York Fair

■ "Weirton Day" was celebrated recently at the World's fair by 3200 Weirton Steel Co. employes and others who traveled to New York from Steubenville, O., and Weirton, W. Va., in a "caravan" of five special trains.

Sponsored by the Employes' Representatives and the Employes' Security League of Weirton Steel Co., trip brought to the fair what was said to be the largest single group yet to attend.

Trains left Weirton and Steubenville Saturday night, Aug. 12, returned Monday morning. Tickets sold for $9 included rail fare, breakfast and lunch, admission to fair grounds and four concessions.

New, Light Caterpillar Motor Grader

■ **Smallest of the Caterpillar motor graders, this new 32-horsepower machine has all the flexibility and features of the larger models. It is powered with either diesel or gasoline engine, has speed range from 1.8 to 10.4 miles per hour, weighs slightly more than half a ton. It is designed especially for the smaller subdivisions and for contractors with roadbuilding or maintenance problems**

Welding Wire Production Off 25 Per Cent in 1938

■ Steel welding wire production last year was 117,395,000 pounds, compared with 155,310,000 pounds in preceding year. This was a decline of less than 25 per cent, against a drop of 44 per cent in steel production, according to the American Iron and Steel institute.

Between 1932 and 1938 welding wire output increased about twice as rapidly as steel output, reflecting wider usage of welding. Steel welding wire production last year was nearly five times greater than in 1932, while ingot production was little more than doubled.

Foundry Equipment Orders Lower in July

■ Foundry equipment orders, shipments and unfilled orders declined in July from June but were higher than in July, 1938, according to the Foundry Equipment Manufacturers' association, Cleveland. Comparisons follow, indexes based on 1922-24:

	July 1939	June 1939	July 1938
Net orders	111.9	134.6	74.2
Shipments	135.5	148.5	105.8
Unfilled orders	135.6	159.2	108.6
3 mos. av. gross orders	118.6	130.0	76.0

Threatens Rival Unions With Public Censure

■ Threat to appeal to public sentiment to force acceptance by the CIO and the AFL of a compromise to avert the CIO's threatened strike in Consumers Power Co. plants was made last week by Arthur E. Raab, chairman of Michigan's new labor relations board.

Such procedure—novel for a governmental body in Michigan—would be an attempt to invoke public pressure to bolster the board's admittedly weak regulatory power. The labor board has delivered an ultimatum to delegations of both unions which are fighting for exclusive bargaining power for Consumers Power employes, giving them until Aug. 21 to accept a proportional representation plan. If the unions reject this proposal, Raab said he would invite public censure.

■ Air conditioning is being installed in many vessels of the United States navy, according to Carrier Corp.'s marine department. Equipment now is being put into two battleships, an aircraft carrier, 26 destroyers, five scout cruisers and a mine layer.

What's New at Pittsburgh . . .

By R. L. HARTFORD
Pittsburgh Editor, STEEL

■ PENNSYLVANIA Manufacturers' association some years ago established a plaque to be known as the president's trophy and to be given to a company in this state "for outstanding achievement in the advancement of safety during the year." The plaque, given only when the achievement is notable, has not been awarded since 1935, but last week came the announcement that Mackintosh-Hemphill Co., maker of heavy steel mill equipment, has been awarded the trophy.

Company's Midland, Pa., plant has been operating since June 27, 1938, without a disabling accident, with operations near capacity. Twice previously this plant has had long no-accident runs, in 1932 and 1934-35.

In a large measure the fine record is due to a safety program administered by Irvin A. Brinkman, who is also secretary and editor of the metals section, National Safety Council, and active in state wide safety work.

Mr. Brinkman attributes the record to the willingness of the men, who have been taught the value of safety and who practice safety as a part of operating procedure.

The award was made at the plant by John M. Flynn, president of the association.

♦ ♦ ♦

Establishes New Warehouses

On-the-spot delivery is the prime necessity in selling small quantity steel. This market is becoming increasingly important, its growth roughly paralleling the increasing specialization of steels and introduction of new alloys.

Allegheny Ludlum Steel Corp. has been faced with this problem more than some of its competitors because of the specialty nature of a large part of its products, and recently embarked on a campaign to modernize its warehouse facilities and broaden the scope where necessary. Two of the newest steps in this program have just been announced. They are the completion of a new warehouse in Detroit, equipped with all modern warehouse gadgets and kinks to insure rapid service; and the achievement of a Toledo warehouse. The new setup brings K. T. French from Cleveland to manage the Toledo unit and to intensify the Allegheny Ludlum sales job in that territory.

District Steel Rates

Percentage of Ingot Capacity Engaged In Leading Districts

	Week ended Aug. 19	Change	Same week 1938	Same week 1937
Pittsburgh	56	+ 4	30	79.5
Chicago	58	+ 2	36	86.5
Eastern Pa.	43	None	30	65
Youngstown	55	None	43	73
Wheeling	86	+ 7	54	89.2
Cleveland	83.5	+ 3.5	41	79.5
Buffalo	58	— 2.5	44	86
Birmingham	75	+ 5	53	96
New England	70	None	50	75
Cincinnati	60	+ 3	65	93
St. Louis	57	+ 2.5	36	84
Detroit	82	+18	52	95
Average	63.5	+ 1.5	41.5	81

Republic Strip Mill Sets Two New Records

■ Republic Steel Corp., Cleveland, has established two new records on its 98-inch continuous strip mill. A total of 1900 gross tons of finished coils, 35½ miles of steel averaging 55 inches wide, was hot-rolled in an 8-hour turn Aug. 10, bettering the previous record of 1887 tons.

The same plant made a new record for cold-rolling Aug. 16, turning out 801.4 tons, roughly 39½ miles of 50 to 63 inches width. Former records were 655 and 707 tons, made by other mills. The new high mark was accomplished in slightly less than seven hours actual rolling time.

Steel Institute Takes Over Tin Statistics

■ International Tin Research and Development council, The Hague, Holland, has closed its New York office and tin statistics hereafter will be released in the United States by the American Iron and Steel institute. The first of these releases states that during July 5275 gross tons of tin were exported from Malaya and 1698 tons from Netherlands Indies. Tin stocks:

Gross Tons

1939	World visible supply*	Smelters' stocks**	Total stocks
Feb.	38,366	11,146	49,512
March	36,645	14,240	50,885
April	35,855	14,261	50,116
May	32,885	10,938	43,823
June	28,831	10,556	39,387
July	28,391	11,121	39,512
1938			
July	37,487	15,016	52,503

* Includes carryover of Straits and Europe (British Tin Smelting Co. excluded).

** Includes tin, tin in intermediate products (including carryover British Tin Smelting Co.).

This release inaugurates a new feature, figures on total stocks of principal smelters, including tin ore and intermediate products.

PRODUCTION

■ STEELWORKS operations last week advanced 1.5 points to 63.5 per cent, a new high for the year. Eight districts showed an advance, one a decline and three were unchanged. A year ago the rate was 41.5 per cent; two years ago 81 per cent.

Youngstown, O.—Continues at 55 per cent, with indications for the same rate this week. Slight lessening of orders is noted but backlogs maintain production.

Cleveland—Reached a new high for two years at 83.5 per cent, up 3.5 points. A small decrease is indicated this week.

Chicago—Gain of 2 points to 58 per cent, highest this year, four mills participating. Higher rate is expected to be reached soon.

Detroit—Up 18 points to 82 per cent as four additional furnaces were lighted, making 20 in production. Further rise of 5 points is expected this week.

Birmingham, Ala.—Addition of an open hearth by Republic Steel Corp. caused a 5-point rise to 75 per cent.

Cincinnati—Further gain of 5 points to 60 per cent with 14 open hearths in production. The same rate is scheduled for this week.

St. Louis—Advance of 2.5 points to 57 per cent followed addition of an open hearth, with indications for further increase soon.

Central eastern seaboard—Unchanged at 43 per cent.

New England—Steady at 70 per cent, one interest dropping an open hearth and another adding one.

Buffalo—Drop of 2.5 points to 58 per cent as an open hearth was withdrawn for repairs.

Pittsburgh—Increases by several interests caused a gain of 4 points to 56 per cent.

Wheeling—Two plants added open hearths, the rate rising 7 points to 86 per cent.

Electric Equipment Sales Up 18% in First Half

■ Electrical machinery, apparatus and supplies sold by manufacturers in the first six months this year totaled $116,260,000, gaining 18 per cent over $98,474,000 for the like period of 1938, according to the department of commerce.

Sales during June, amounting to $35,728,000, were 24 per cent ahead of last year, and 1½ per cent more than in May without adjustment for seasonal variation.

Wholesalers of electrical goods increased their sales in the first half 16 per cent over the corresponding months in 1938. June sales were 3 per cent greater than those for May, exceeded 1938 by 39 per cent.

MEN OF INDUSTRY

■ H. W. GRAHAM, associated with Jones & Laughlin Steel Corp., Pittsburgh, since 1914, for many years as general metallurgist, has been made director of metallurgy and research. C. C. Henning, heretofore assistant to Mr. Graham, becomes general metallurgist. The new titles involve no change in the organization set-up of the department.

Mr. Graham is chairman, executive committee, Industrial Research institute, and is a member of a number of societies, including American Society for Testing Materials, American Society for Metals, American Institute of Mining and Metallurgical Engineers, Engineers Society of Western Pennsylvania, American Iron and Steel institute, Iron and Steel institute (British), and Verein Deutscher Eisenhuettenleute (German Iron and Steel institute).

Mr. Henning joined Jones & Laughlin in 1915 in the metallurgical department, Pittsburgh works. He is a member, American Society for Testing Materials and American Society for Metals.

♦

Robert Gregg, president, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., arrived in New York Aug. 17, following a European trip.

♦

W. Gibson Carey Jr., president, Yale & Towne Mfg. Co., New York, arrived in that city Aug. 17, following a European visit.

♦

George Clark, for four years metallurgist with Kelsey-Hayes Wheel Co., Detroit, is now associated with Steel Sales Corp., Detroit.

♦

S. Horace Disston, president, Henry Disston & Sons Inc., Philadelphia, was injured in the Nevada passenger train wreck early last week.

♦

Lawrence E. Joseph, until recently manager, National Automatic Tool Co., Richmond, Ind., has become associated with Blaw-Knox Co., Pittsburgh, as executive officer in charge of its Blaw-Knox division. Mr. Joseph succeeds R. F. McCloskey Sr., a company vice president, who was placed in charge of the development of new products for the entire corporation.

♦

John H. Elliott has been named assistant to the general superintendent, Irvin works, Carnegie-Illinois Steel Corp., Clairton, Pa. William A. Marshall has been chosen division superintendent of tin finishing, succeeding Mr. Elliott; Roy E. Howell, assistant division superintendent of tin finishing; Warren W. Scherer, superintendent of maintenance, succeeding Mr. Marshall, and Arthur M. Krieger, assistant superintendent of maintenance, succeeding Mr. Scherer.

H. W. Graham

C. C. Henning

Lawrence E. Joseph

♦

Tom Turner, associated with Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., 17 years, and since 1934 superintendent of the Westinghouse Newark works, has been named manager, meter division, Newark, N. J., to succeed the late Ralph M. Rumbel.

♦

G. C. Creusere, the past three and a half years metallurgist, Kelsey-Hayes Wheel Co., Detroit, is now associated with Semet Solvay Co., Detroit, in a sales engineering capacity.

♦

Waldo F. Tucker has been appointed manager, Los Angeles office, Acme Steel Co., Chicago. Mr. Tucker has been identified with Acme 13 years in the southern California district. Associated with Mr. Tucker will be Norman D. Mead.

♦

A. S. Hamilton, engaged in sales work in the Buffalo office of Wheeling Steel Corp., Wheeling, W. Va., for several years, has been named district manager at Buffalo. He succeeds S. M. Hopkins, who resigned to become associated with Seneca Steel Service Corp.

♦

J. H. Crawley, foundry superintendent since 1936, Pontiac Motor division, General Motors Corp., Pontiac, Mich., has resigned. Mr. Crawley is a former chairman of the Detroit chapter, American Foundrymen's association. He has been succeeded by Omer L. Allen, for 24 years associated with Wilson Foundry & Machine Co., Pontiac, latterly as general superintendent.

♦

G. W. Van Syoc, General Motors building, Detroit, is a sales broker for Powell Pressed Steel Co., Hubbard, O., on stampings only, in Detroit, Pontiac, Flint and Lansing, Mich. The Powell company maintains development and engineering departments at Hubbard, under the jurisdiction of E. J. Powell, chief engineer, and the sales department under direction of H. S. Wylde, vice president. All inquiries on products manufactured by the Powell company should be forwarded to Hubbard. This corrects any erroneous impression which may have been given in STEEL, Aug. 14, p. 23, with reference to G. W. Van Syoc furnishing engineering development and sales service for the Powell Pressed Steel Co.

♦

G. R. Prout has been appointed manager of sales of industrial control, and W. T. Darcy has been named manager of sales of renewal parts, General Electric Co., Schenectady, N. Y., effective Sept. 1. Mr.

Prout was formerly acting manager, southwestern district for the company's industrial department, while Mr. Darcy has been serving as assistant to W. C. Yates, manager, control and renewal parts division.

♦

Carl C. Joys Jr., vice president and director, A. O. Smith Corp., Milwaukee, has resigned, effective Sept. 1. Mr. Joys has been with A. O. Smith since August, 1924, when the company entered the oil field market with electric-welded pressure vessels, and has been directing sales of all the company's products for this market since that time. He became a director in 1927 and has been a vice president since 1935. Before joining A. O. Smith Mr. Joys gained oil field experience in California.

♦

J. D. Sullivan has been appointed manager of sales, special products division, Colorado Fuel & Iron

J. D. Sullivan

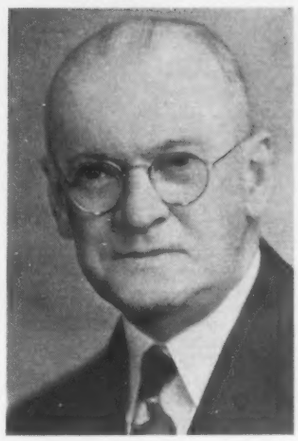
Corp., Denver. A native of Texas, Mr. Sullivan was educated at Baylor university and Colorado School of Mines. He formerly was with Gates Rubber Co., Denver, as division manager for industrial division of sales.

♦

J. H. Vogel, since 1934 assistant works manager in charge of methods and equipment, York Ice Machinery Corp., York, Pa., has been promoted to general works manager of the corporation. A graduate of Penn state, Mr. Vogel worked for York during summer vacations and upon graduation in 1923 continued with the corporation as an outside erecting engineer. Three years later he was assigned to special developments in the superintendent's department and eventually was made assistant superintendent.

♦

B. F. Mercer has joined the steel foundry sales staff of Allegheny Ludlum Steel Corp., Pittsburgh,



B. F. Mercer

with headquarters at Brackenridge, Pa. Mr. Mercer's associations date back to 1912 when he served the Union Steel Casting Co., Pittsburgh, first as foreman and then as general superintendent until 1928. In 1929 he joined Pittsburgh Steel Foundry Corp. as manager of the Sharon, Pa., works. From 1930 until 1933 he acted as vice president in charge of operations, Union Steel Casting Co. During the latter part of 1933 he became associated with National Erie Corp., Erie, Pa., as sales representative, retaining that post up to the time of his present appointment.

♦

H. W. Fletcher, chief engineer, Hughes Tool Co., Houston, Tex., for 22 years, has been appointed vice president and general manager, to fill the vacancy created by the death of Stanley P. Brown Aug. 11. A graduate of Cornell university in 1915, his first position was with Newark Spring Mattress Co., Newark, N. J. Later he became an engineer with a construction company engaged in building one of the New York city subway lines. He then became acquainted with the late Howard Hughes, founder of the Hughes Tool Co., and joined that company in 1917.

♦

George T. Horton, president, Chicago Bridge & Iron Co., Chicago, has been elected president, American Welding society for 1939-40. T. C. Smith, structural engineer, General Petroleum Corp., Los Angeles, is the new first vice president, and L. S. Moisseiff, consulting engineer, New York, becomes second vice president.

District vice presidents are: New York and New England, W. F. Hess, instructor of electrical engineering, Rensselaer Polytechnic institute, Troy, N. Y: middle eastern, L. C. Bibber, welding engineer, Carnegie-Illinois Steel Corp., Pittsburgh; middle western, K. L. Hansen, consulting electrical engineer, Milwaukee; southern, A. J. Moses, Combustion Engineering Co. Inc., Chattanooga, Tenn.; Pacific coast, L. W. Delhi, manager, Western Pipe & Steel Co., San Francisco.

Directors at large include: E. V. David, assistant manager, applied engineering department, New York; J. D. Gordon, general manager, Taylor-Winfield Corp., Warren, O.; G. F. Jenks, colonel, ordnance department, office of chief of ordnance, Washington; and H. S. Smith, consulting engineer, Union Carbide Co., New York.

New officers will be inducted at the annual meeting of the society in Chicago, Oct. 23-27.

DIED:

■ JOHN R. BOOHER, 61, the past 17 years advertising manager, Cleveland Crane & Engineering Co., Wickliffe, O., in Kirtland, O., Aug. 15. Before that he was with the Leutkemeyer Co., Pittsburgh; Doubleday-Hill Electric Co., Pittsburgh; Westinghouse Electric & Mfg. Co., Pittsburgh and Cleveland, and the Cuyahoga Power Construction Co., Cleveland.

♦

Eugene Tetzlaff, 74, president and founder, Flour City Ornamental Iron Co., Minneapolis, Aug. 10 in that city.

♦

John Isaacson, 64, president, Isaacson Iron Works and Young Iron Works, Seattle, in San Francisco, Aug. 9.

♦

George M. Simpson, 48, service engineer in the metallurgical department, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., and associated with the company 25 years, in that city, Aug. 13.

♦

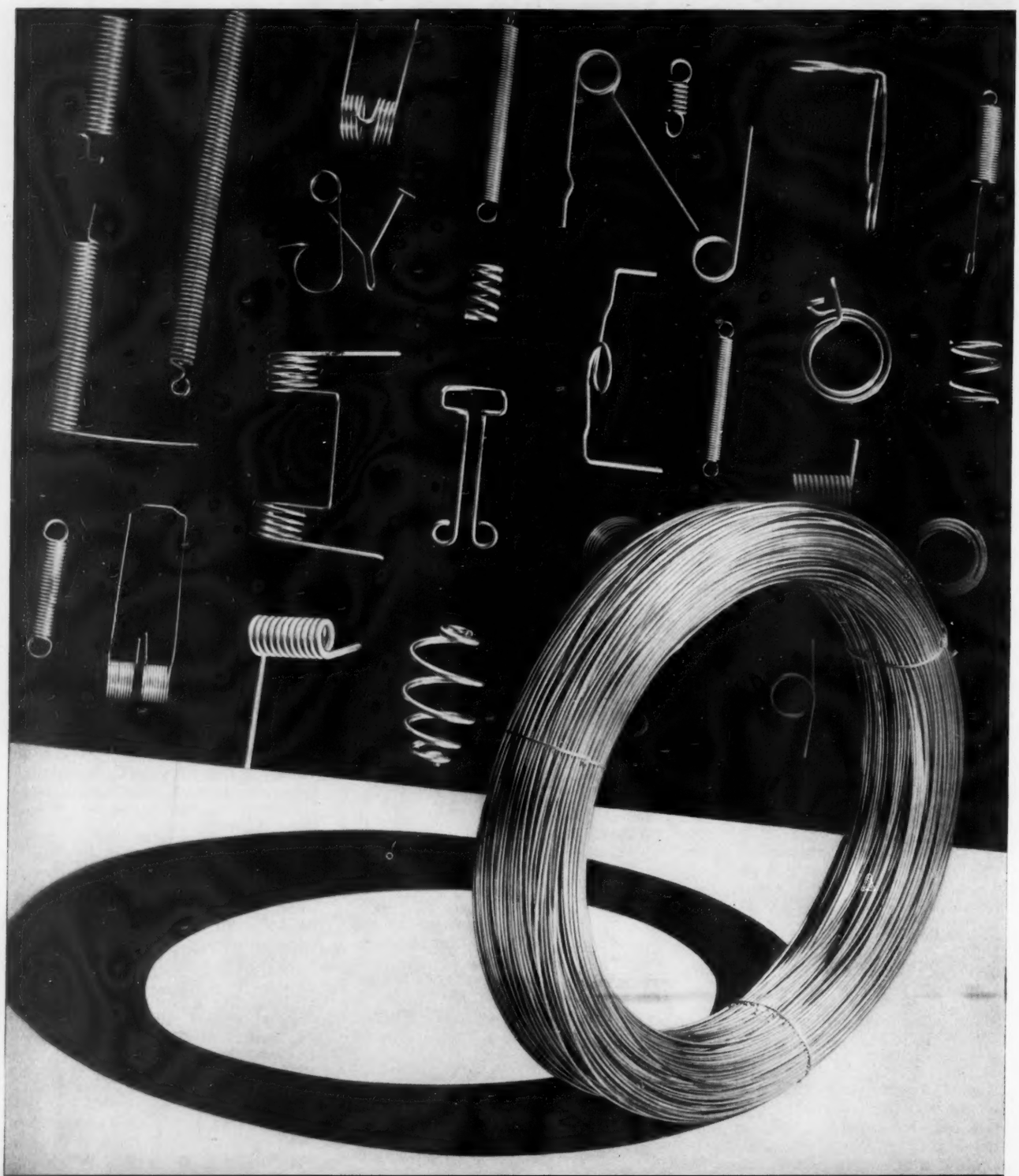
Perry Childs Hill, 60, assistant to the president, Whitman & Barnes, Detroit, in that city, Aug. 12. Mr. Hill was associated with Whitman & Barnes from 1917 to 1926 and returned again in 1934.

♦

J. D. Lyon, 78, retired Pittsburgh banker, and a director A. M. Byers Co. and Pittsburgh Coal Co., in Hanover, N. H., Aug. 14. At one time he was chairman, finance committee, A. M. Byers Co.

♦

Stanley P. Brown, 46, who recently was named president and general manager, Hughes Tool Co., Houston, Tex., Aug. 11 in that city. Associated with the company 20 years, Mr. Brown was sales manager for 13 years, following which he was made a vice president.



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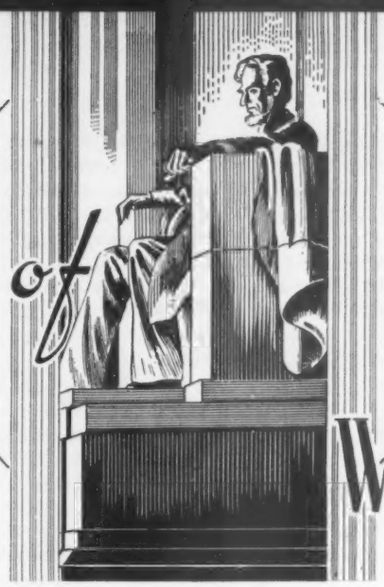


By L. M. LAMM
Washington Editor, STEEL

WASHINGTON

■ JOHN W. HANES, acting secretary of the treasury, last week invited representatives of industry, labor, commerce, banking, agriculture, and the professions to present their views on taxation.

Mr. Hanes said the information obtained will be assembled for use by the special house ways and means subcommittee which is making a study of the entire tax situation during the congressional recess. In addition to asking for written suggestions on tax revision. He said he would be glad to arrange for interested parties to discuss their tax views with the treasury officials at private hearings.

The treasury official, who often does not see eye to eye with other administration officials and who is considered a friend of business, largely was responsible for the tax revision program put through the last session of congress. This, among other things, eliminated the undistributed profits tax.

Will Compile Tax Opinion

His letter soliciting tax views: "Chairman of the subcommittee, Mr. Jere Cooper, is desirous of having all pertinent material ready for presentation early in the next session of congress. With the approval of his committee, I am writing to ask your co-operation in this effort to work out a tax revision program which will further improve the laws relating to individual and corporate taxes, the regulations derived therefrom and the administrative procedure in their collections.

"If you or any organization with which you are connected should be interested in having your views placed before the committee in full, I shall be glad to arrange at a time convenient to you before Nov. 1, a private hearing before the treasury staff, assigned to compile a record of present public tax opinion. Your views will receive every consideration and I shall appreciate your help.

"This is our common problem and a successful effort toward its solution will depend largely on our mutual and sympathetic understanding of the questions that confront both the government and the tax payer."

ANDREWS TO BEAR DOWN ON WAGE-HOUR OFFENDERS

Plans to "crack down" on violators of the fair labor standards act were being formulated last week by Wage-Hour Administrator Elmer F. Andrews as the scheduled deadline approached for raising the national wage minimum and reducing maximum hours.

Assured White House support and armed with a $1,200,000 enforcement appropriation, Andrews announces he will soon make temporary appointments increasing by 300 the 200 inspectors already in the field. Lacking funds for personnel, wage-hour officials have settled but 1000 of the 19,000 complaints filed by workers against employers since promulgation of the law.

On Oct. 24 under provisions of the act the present 25 cents an hour minimum wage for industries engaged in interstate commerce will be boosted to 30 cents. At the same time the maximum work week drops to 42 hours from present 44-hour ceiling.

Decentralized administration of the wage-hour act is to be tested with a new regional office just set up in Richmond, Va. First of 14 projected district offices, Richmond will handle wage and hour questions in Virginia, West Virginia, Maryland and the District of Columbia. Offices are next to be established in Philadelphia, New York and Cleveland.

Wage levels higher than the national minimum were ordered by Andrews last week for the hosiery industry upon unanimous recommendation of the industry's committee. Similar increases are expected to follow in other fields. Six committees have already recommended higher minima in their industries, ranging from a 32-cent hourly minimum for textiles to 40 cents in millinery.

Higher production costs resulting from the advance in hosiery industry's scale will create serious problems for many mills in the South, according to the Southern Hosiery Manufacturers' association. Some time must pass before the full effects can be ascertained, but it is considered certain that numerous plants now using outdated equipment will be forced to install automatic machinery if they are to remain in business.

HOPKINS CHOOSES EXPERTS TO ADVISE ON BUSINESS

Harry L. Hopkins, secretary of commerce, has chosen seven personal aides, all experienced in some field of economics, whose task will be to put the department of commerce in better position to guide administration economic policies.

Richard V. Gilbert, public finance expert at Harvard university, heads the staff. Others are: V. L. Bassie, formerly with the federal reserve board; Rodney Riley, former University of Cincinnati economist; Carol Wilson, of Scudder, Stevens & Clark, New York, investment counsel firm; Robert L. Davison of Pierce foundation; James Hughes, former NRA expert, and Paul Truitt of the treasury. Others may be named later.

It is indicated the staff will deal with problems related to government spending and lending, investment, construction, communications, public works, industries where knotty problems exist and reasons why business lags in certain areas.

PIPE, TUBING STANDARD TO GIVE ECONOMIES

New standard for dimensions and materials of wrought iron and wrought steel pipe and tubing which is expected to result in substantial savings and added convenience to producers and consumers was approved recently by the American Standards association.

Until recent years requirements

for wrought iron and wrought steel pipe were adequately met by three schedules for pipe which came into use in 1886: Standard weight; extra strong; and double-extra strong. However, new pipemaking methods employing alloy steels developed to meet the needs of modern industry brought demand for a great variety of wall thicknesses, diameters and other specifications.

To revise the old schedules the Standards association organized a committee whose administrative leaders were provided by the American Society of Mechanical Engineers and the American Society for Testing Materials. Its revision was given a three-year trial in actual use, has been approved by 27 associations, technical societies and government departments.

New standard consists of ten weight and thickness schedules running from the lightest to the heaviest pipe in use. Tabular wall thicknesses have been worked out by a new basic formula. Provision is made for materials yet to be developed and service conditions more severe than at present. Pipe conforming to the new schedules can he had in numerous specifications.

Standard is available at cost of 50 cents from the American Standards association, 29 West Thirty-ninth street, New York.

FIGHT FOR SPEND-LEND PROGRAM SET FOR FALL

Campaign for revival of the spend-lend program is being planned by New Dealers, to be carried on in connection with hearings by the senate banking and currency committee, looking toward a new national monetary and banking policy, initiated in a resolution by Senator Wagner, New York. Hearings probably will open in October.

The credit program suggested in the resolution met determined opposition in the closing days of the recent session, as indirect socialization of the national credit structure.

INDUSTRIAL MARKET GUIDE BY COMMERCE DEPARTMENT

Now being distributed by the department of commerce is a new guidebook for businessmen, the *Industrial Market Data Handbook*, containing data useful in setting up sales territories, production quotas and marketing campaigns.

First of its kind ever published, the handbook offers detailed information as of 1935 on industrial production, employment, value of products, cost of material, fuel and power, and output per worker for each county in the United States, and every city of more than 10,000 population.

Tabulated by industries are the county locations of 169,111 manufacturing plants, while parallel tables cover by type of mine the locations of the country's 23,000 mines. Operation summaries are presented on a national basis for 280 industries. Other tables give information on channels of distribution, manufacturing costs and wholesale operations.

Handbook was jointly prepared by the bureau of foreign and domestic commerce, census bureau, and the bureau of mines. Secretary of Commerce Harry L. Hopkins points out this study, designed to aid sales and advertising executives, offers the most complete data available on American industrial markets.

JAPAN TO INCREASE CAR, LOCOMOTIVE PRODUCTION

Reports to the department of commerce indicate Japan is taking steps to increase production facilities for railroad locomotives and cars. Existing plants will be expanded. Shortage of machine tools and other industrial equipment is said to be the greatest obstacle. The railway ministry is reported to have failed recently to place orders for about $32,000,000 worth of rolling stock because domestic producers lacked facilities.

Japan exports locomotives and cars in considerable volume, the report states, reaching a total value of $8,550,000 in 1938, most going to Kwantung province for the South Manchurian railroad.

MOBILIZATION PLANS STUDIED BY WAR RESOURCES BOARD

Newly-created war resources board met last week with Assistant Secretary of War Louis Johnson to begin a "precautionary study" which may involve extensive revision of the master plan for mobilizing industry in event of national emergency.

Group was instructed by Johnson to seek flaws and omissions in the mobilization blueprints which war department experts have been drafting during the past 18 years. He indicated if war came the board's civilian head, Edward R. Stettinius Jr., board chairman of United States Steel Corp., would become czar of the nation's industry.

HULL MAY DISCLOSE STAND ON JAPANESE SHIPMENTS

State department is preparing a letter to Senator Schwellenbach, Washington, which is expected to reveal the department's position regarding extension to other commodities of the "moral embargo" now in force on shipment of airplanes to Japan.

Schwellenbach recently wrote Secretary Hull asking the state department to use its influence on American manufacturers to bring about a cessation of war supply shipments to Japan as a substitute for or prelude to a formal embargo on all war equipment.

The informal embargo on aircraft to the Nipponese was established last winter when the state department requested planemakers not to sell to nations engaged in bombing of civilian populations. In 1938 Japan bought American aeronautical equipment valued at $11,000,000; this year's shipments have been negligible. Whether the embargo is entirely responsible for this decline cannot be determined, but it is known that even before the state department had expressed its views one aircraft builder refused a fat order from the Japanese.

50 WELDED TANK CARS FOR TESTING APPROVED BY ICC

Interstate commerce commission last week authorized General American Transportation Corp., Chicago, to construct for testing 50 additional tank cars fabricated by fusion welding. Permission for their construction was sought by the Association of American Railroads.

Designed for transporting caustic soda solution, the welded cars are said to be preferable to riveted cars for such use because caustic-resistant paint can be more successfully applied to a smooth inner surface.

FIRST-HALF BUILDING SHOWS MARKED UPSWING

Secretary Hopkins, department of commerce, announces total value of construction contracts for first half, 1939, exceeded the similar period last year by 31 per cent and is greater than in the similar period of most recent years.

The report points out the volume of construction contracts for the entire year will not make as favorable a showing and probably will make little increase over last year. Residential contracts showed an increase of almost two-thirds over first half, 1938. Commercial and factory building, however, according to estimates, were less in first half this year than last.

WOULD ELIMINATE MANY EAVES TROUGH, PIPE SIZES

Revision of simplified practice recommendation R29, eaves trough and conductor pipe, is being undertaken by the bureau of standards. The recommendation became effective July 1, 1925, and has been reaffirmed in succeeding years. Proposed revision would eliminate the 3½ and 8-inch eaves trough and add a 1½-inch plain round conductor pipe. It also is proposed to include box and roof gutters and plain ridge rolls, eliminating about 200 items.

AVIATION

BUILDERS REPORT RECORD PROFITS FOR FIRST HALF

■ PROFITS this year are largest in history of the aircraft industry. For the first six months of 1939 seven leading builders of airplanes and engines show net earnings aggregating $14,417,000, almost 60 per cent more than the $9,233,000 reported in the like period last year.

With order backlogs at record levels and production schedules being increased at major plants, earnings are expected to move higher during the second half.

Favoring more profitable operations is the army air corps' current relaxing of competitive bid requirements in the awarding of plane and engine orders, and its adoption of negotiated contracting for parts. Now in effect on air corps contracts, is a 12 per cent profits limit; losses may be averaged against profits over a five-year period.

In a survey of leading industrial corporations by the National City bank, New York, aircraft manufacturers were found to have the highest annual rate of return on investment for any group covered (STEEL, Aug. 7, p. 29). On the basis of earnings for the opening half of 1939 six aeronautical firms averaged 24.6 per cent annual rate of return.

Announcements continue of plant expansions in this industry, although few projects are of spectacular proportions. Air-Track Mfg. Co., recently organized in Detroit, proposes to spend $175,000 to build a factory for producing aerial navigation and other precision instruments.

Contracts have been awarded by Bendix Aviation Corp. for two new buildings at Burbank, Calif. To cost more than $40,000, structures will provide additional manufacturing and office space.

Many firms are registering projected issues of new securities; major portion of proceeds generally are allotted to expansion of plants and production equipment. Most recent: Transair Corp., Washington, $1,000,000; Timm Aircraft Corp., Van Nuys, Calif., $400,000; and Kinner Motors Inc., Glendale, Calif., $385,978.

Employe-Housing Planned

Announced last week by Glenn L. Martin Co. were plans for an $8,000,000 low-cost housing development adjacent to its Middle River, Md., plant. Financed by private capital, the project is intended for the use of Martin's 6000 employes, although not restricted to them. First units are to be ready for occupancy in December.

Co-operating with the Martin company, Baltimore school authorities have established a new vocational course for aircraft assembly workers. High school graduates are trained for three months in fundamentals of industrial workmanship, use of tools in metal shops, and the manufacture and assembly of aircraft parts. Students use equipment provided by Martin, after graduation are eligible for employment in its plant.

Extensive establishment of such courses was urged in a report submitted recently to President Roosevelt by an interdepartmental committee headed by Oswald Ryan of the civil aeronautics authority. Report spotlighted the aircraft industry's pressing need for thousands of additional trained workers.

Estimated annual savings of $100,000 will accrue to airplane and engine manufacturers from the civil aeronautics authority's action in amending air regulations to permit companies to substitute "statements of conformity" for sworn oaths on 21 forms required for the authority's records. CAA said it declined to burden the industry with the "undue, undesirable and unnecessary" expense of notarized affidavits.

Recent navy department awards for aeronautical equipment: Hamilton Standard Propellers division of United Aircraft Corp., East Hartford, Conn., parts and tools for naval aircraft factory at Philadelphia, $100,000; and Eclipse division of Bendix Aviation Corp., Bendix, N. J., starters, $43,614.

Task of building an experimental 42-cylinder aviation engine has been assigned by the war department, together with a $60,900 grant, to Wright Aeronautical Corp., Paterson, N. J. Although official details are closely guarded, the motor is said to be a three-bank radial with 14 cylinders in each row.

Blaw-Knox Co., Pittsburgh, is expected soon to place on the market a new line of predesigned steel hangars which may be delivered complete, ready for erection either by the purchaser or by a special Blaw-Knox erection service. Standard models will include single-span widths up to 100 feet.

Steel Hoist To Place Propellers

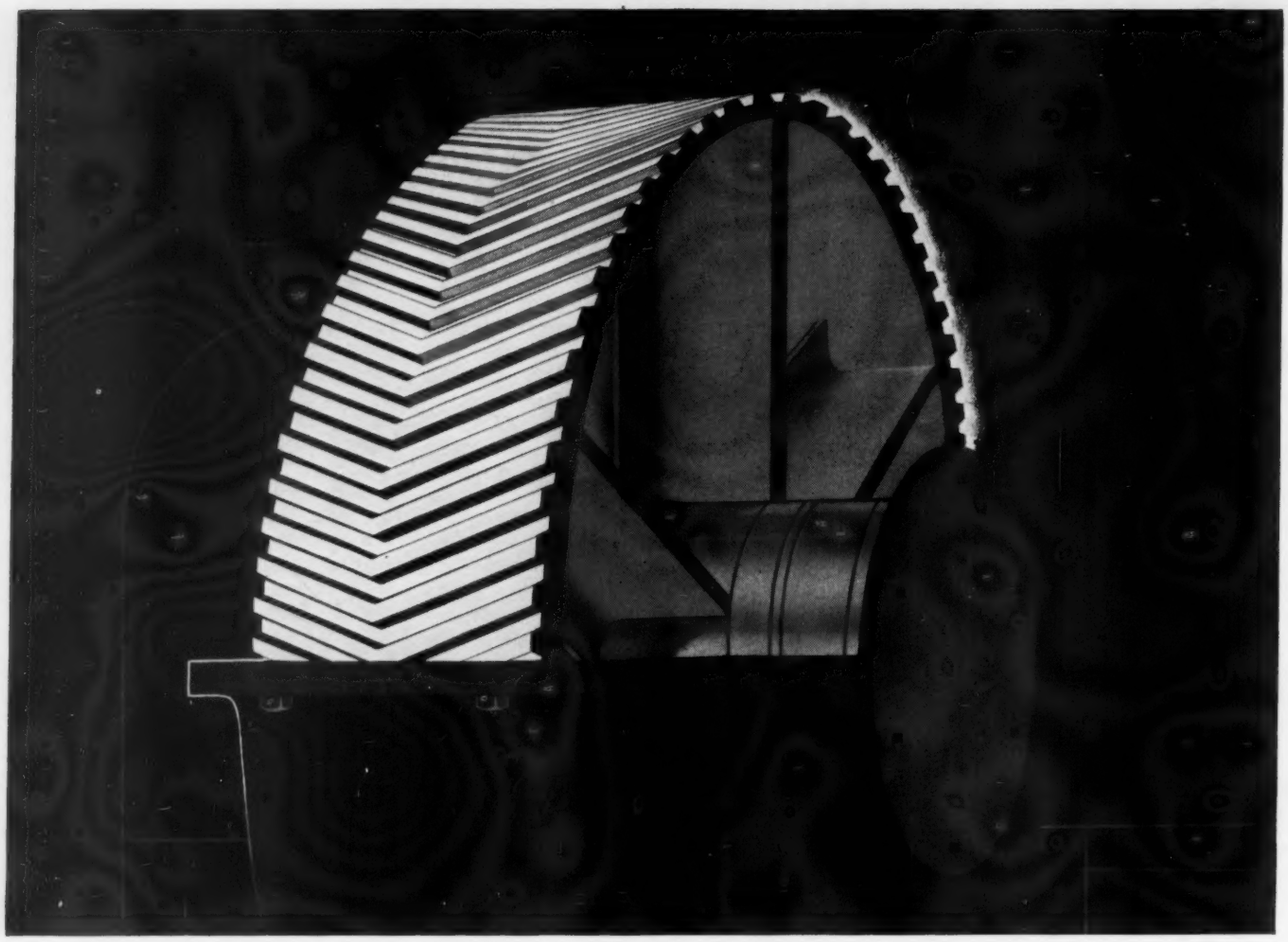
■ **Eastern Air Lines uses this specially-designed steel hoist and work stand to install propellers on transport planes. During inspection checks at company's Miami, Fla., operations base, engines and propellers must be dismounted regularly. Three-bladed propeller shown weighs about 400 pounds**

Hoe Takes Aeronautical Orders in New Program

■ Formation of an industrial division to carry out its new program for product diversification has been announced by R. Hoe & Co. Inc. For more than 100 years the company's New York and Dunnellen, N. J., plants have produced newspaper and magazine printing presses and saws.

First bookings by the new division were for aeronautical and armament equipment. Leading aircraft firms have contracted for products such as crankcases, propeller brake drums, jigs and fixtures. An "educational order" for recoil mechanisms for antiaircraft gun mounts was received from the war department.

Company has ample facilities for diversified production. Its 215,000-square foot machine shop at New York is supplemented at Dunnellen by additional shops and a modern foundry with daily capacity of 60 tons of castings.



A CASE OF STANDARDIZATION

The fewer the different steels with which a foundry works, the simpler its operation, the better the techniques it develops — and the lower its costs. Standardization brings competitive advantages to the foundry, service benefits to its customers.

Molybdenum steels frequently make such standardization possible. For example, a large foundry uses cast Manganese-Molybdenum steel for an entire line of herringbone, single helical, and spur reducer gears up to 60 inches O.D. with hardness specifications ranging from 180 to 270 B.H.N. and corresponding variation in required strengths. With this versatile steel, the specified hardnesses and physical properties are obtained simply by varying the heat treatment.

In addition, cast Manganese-Molybdenum, being free cutting at high hardness, permits machining of the uniformly sharp and even teeth required.

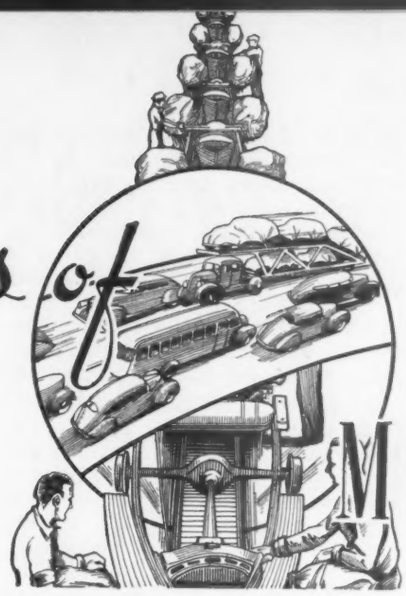
Molybdenum steels, both cast and wrought, are keeping down costs and bettering performance in many such cases. Our book, "Molybdenum in Steel," giving practical data, will be sent free on request to production executives and engineers.

PRODUCERS OF MOLYBDENUM BRIQUETTES, FERRO-MOLYBDENUM, AND CALCIUM MOLYBDATE

Climax Mo-lyb-den-um Company
500 Fifth Avenue · New York City

MOLY

Mirrors of MOTORDOM



By A. H. ALLEN
Detroit Editor, STEEL

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DETROIT

■ WITH the echo of the starting gun still audible, the 1940 model run is off to an auspicious start. By Labor day, or in two weeks, volume production should be in full swing, for by then the Ford assembly lines will be humming, Chevrolet likely will be gaining momentum, all Chrysler lines will be moving into the field, and virtually the entire industry will be buckling down to the task of rushing cars into dealers' hands.

Of concern at the moment is the probable showing the industry will make for the model year. Practically all estimates point to an increase over the 1939 model year, percentages varying from 2 or 3 up to 15 or 20. A safe estimate, barring unforeseen events and circumstances, would be 12 per cent. What does this mean in actual output? Total for the 1939 model year, starting with September, 1938, and with July and August totals for this year still unofficial, comes to, roughly, 3,448,000 cars and trucks. A 12 per cent increase for 1940 would bring output to 3,862,000 or for practical purposes a 4,000,000-car year, against a 3,500,000-car year in 1939. The latter was about 24 per cent ahead of the 2,791,000 total for the 1938 model year, bearing out estimates made here a year ago of a 25 per cent improvement to come.

Certainly there is no pessimism evident in viewing the outlook for the coming 12 months. A tendency toward caution, however, is noted, and there are no rash predictions of a sharp upward movement.

Outlook for earnings, especially for the large producers, would seem especially bright, particularly in view of the healthy profits realized in the first half of this year. Material costs, steel for example, will be lower. Labor costs will be about the same. Car prices will be only fractionally, if any, lower. As an indication of the latter, Packard prices are down from $20 to $100, and Hudson from $25 to $43. At the same time, more value is being built into the 1940 models without appreciably increasing manufacturing costs.

Preview of the new Chrysler lines has been scheduled for Aug. 22 and pilot cars are now going down assembly lines in the four divisions of the corporation. Plymouth and Dodge, in fact, were scheduled to have new models rolling in fair volume last week.

Previews Are Prepared

Buick is readying cars for its press preview and dealer convention in Flint this week and was not as badly crippled by the tool and die makers' strike as had been thought originally. Pontiac will show its new models to the press on Aug. 24. Olds' showing will not be until Sept. 11.

Present indications are that the new Torpedo series, to be introduced shortly by General Motors, will be available in Pontiac and Olds models, as well as in the Buick line. As pointed out here previously, Buick probably will have a 50 and a 70 model in the Torpedo series. Pontiac will have a Torpedo Eight in sport coupe and four-door sedan models, in addition to its regular line of 8-cylinder models and two lines of 6-cylinder models, if local comment is credible. It is inferred that Olds will have a setup similar to that of Pontiac.

The term Torpedo identifies a new body style, said to be similar to that of the Cadillac 60, ultrastreamlined, without running boards, with extra wide seats and numerous other touches heretofore untried on motor car bodies.

The new Packard 8-cylinder engine, developed for the 160 and 180 models, has a bore of 3½ inches and stroke of 4⅝ inches, and is rated at 160 horsepower at 3500 r.p.m. Cylinders and upper half of the crankcase are cast in one piece and extra heavy reinforcements are provided in the webs which carry the nine main bearings. Crankshaft is completely counterbalanced and

Auto Industry's Vital Statistics

■ SIZE and worth of the automotive industry in the United States is ably portrayed in the annual *Automobile Facts and Figures*, published by the Automobile Manufacturers association, this year in its twenty-first edition. Following are a few of the figures contained in the 96-page volume:

Factory sales (United States and Canada) of cars and trucks	2,655,171
Wholesale value of motor vehicles, parts and tires	$2,779,299,414
Foreign sales of American motor vehicles	492,028
Registrations in United States:	
Cars	25,261,649
Trucks	4,224,031
Capital invested (net tangible assets) in car and truck plants in the United States	$1,300,652,000
Employment and wages in United States plants:	
Wage earners in motor vehicle and parts plants	306,000
Wages in motor vehicle and parts plants	$455,000,000
Employed directly and indirectly in highway transportation	6,380,000
Number of motor vehicle dealers in Unted States	41,700
Total taxes on motor vehicle owners	$1,529,312,125

has a high finish from end to end. Oil is forced to all parts under pressure and metered. Hydraulic valve lifters contribute to smoothness.

The Packard foundry, incidentally, is operating one shift daily, pouring about 190 tons. By getting an early start on June 12, the foundry was able to build up a bank of 10,000 blocks and thus did not have to go on two shifts with the rest of the plant during the warm weather. However, with about 7000 cars already off assembly lines, this bank of engine blocks has been cut into appreciably and the foundry may have to resume two shifts in another few weeks.

Subassembly lines at Ford are now operating on 1940 parts preparatory to starting final assemblies around Sept. 5. It is reported assemblies of the Mercury line will be portioned between the Lincoln plant and the B building at the Rouge, a part of which is now being fitted up for Mercury production.

Ford engineers still are working on designs for the small, light car which has been mentioned off and on for the past several years as a live project. It is understood a satisfactory light V-8 engine has been perfected for the job, which shows gasoline economy of around 25 miles per gallon, and work is now being concentrated on suitable body designs to go with the engine. It is considered unlikely this small car will appear in the 1940 Ford line, but at least the preparations for it are continuing.

The remarkable showing which Studebaker made this year with its light, low-priced Champion model, enabling the company to turn out 53,000 cars in the first six months of the year, against 19,800 in the same period last year, might be construed as an incentive to accelerate the numerous small car projects which have been talked of around here for some time. Chrysler is said to have preliminary work done on such a car, and it is well known that Nash has had samples built and lately revised on a car in this class.

■ ANOTHER new development in springing may make its appearance on some of the 1940 models. It involves the conventional type of leaf spring, made of a special grooved steel stock and given a Wheelabrating or airless blasting with abrasive grit to improve fatigue life. Use of grooved steel leaves in springs is not new, Cadillac, for example, now using this type of leaf, but the surface treatment by blasting is new and is claimed to bring about a 40 per cent increase in fatigue life of the leaf.

Grooved section permits a saving of about 10 per cent in steel weight and also allows the insertion of some lubricating device between the leaves of the spring, in the groove. Whether the extra cost involved in treating the surface of the leaves is counterbalanced by the improved properties resulting now appears to be the question to be decided, but there is said to be a good chance of the spring being used in production.

Electric Auto-Lite Ltd., Sarnia, Ont., is augmenting its spark plug production facilities by building additions of 8000 square feet and purchase of $70,000 worth of new machinery, according to A. F. Oliver, for the past ten years sales and service manager for Auto-Lite in Canada. Plugs will be identical with those produced by the company in this country at its plant in Fostoria, O. Initial production schedules for the Canadian division have been set at 8000 plugs daily.

In two years, production of plugs by this company, according to its Toledo, O., headquarters, has jumped from 6000 per day to 60,000 per day. All the Chrysler divisions and Nash use Auto-Lite plugs as original equipment. The company is also active in production of a wide range of other electrical items used on the Chrysler lines, including the new sealed-beam headlamps.

Seven companies in all will supply requirements of the automotive industry for the new headlamps. They include: Corcoran - Brown (Electric Auto - Lite subsidiary), General Electric, Guide Lamp division of General Motors, C. M. Hall Lamp Co., Tung-Sol Lamp Works, Ford Motor Co. and the lamp division of Westinghouse.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1937	1938	1939
Jan.	399,186	227,130	353,946
Feb.	383,900	202,589	312,141
March	519,022	238,598	389,489
April	553,231	238,133	354,263
May	540,377	210,183	313,214
June	521,153	189,399	324,235
July	456,909	150,444	*198,000
7 mos.	3,373,778	1,456,501	2,245,288
Aug.	405,072	96,936	.....
Sept.	175,630	89,623	.....
Oct.	337,979	215,296	.....
Nov.	376,629	390,350	.....
Dec.	347,349	407,016	.....
Year	5,016,437	2,655,777	.....

*Estimated.

Estimated by *Ward's Reports*

Week ended:	1939	1938†
July 22	47,420	32,070
July 29	40,595	30,390
Aug. 5	28,250	14,771
Aug 12	24,875	13,790
Aug. 19	12,955	23,940

†Comparable week.

	Week Ended Aug. 19	Aug. 12
General Motors	1,215	1,030
Chrysler	2,450	2,140
Ford	2,025	17,000
All others	7,305	4,705

■ DETROIT was watching the vote taken Thursday at the Packard plant carefully, as an indication of labor sentiment generally throughout the auto industry. In the first of the NLRB-sponsored elections, 9000 employes were eligible to vote the union or nonunion preferences. Tabulation of the returns was expected to be made late Friday.

July Scrap Consumption Increases Slightly

■ Domestic consumption of scrap iron and steel increased only slightly in July over June, but showed a noteworthy gain over July, 1938, according to the Institute of Scrap Iron and Steel Inc., New York.

July consumption is estimated at 2,551,000 tons compared with 2,428,000 tons in June and 1,519,000 tons in July, 1938.

For the first seven months this year, domestic consumption is placed at 16,981,000 tons, an increase of about 72 per cent over the 9,822,000 tons melted in the comparable period of last year.

Consumption is about evenly divided between purchased scrap and "home" scrap.

Hydraulic Lift Features Harvester's New Tractors

■ International Harvester Co., Chicago, recently announced two new Farmall tractors, a large and medium size, to complete the line introduced a month ago with the light Farmall-A (STEEL, July 17. p. 27). Designated the Farmall-H and the Farmall-M they develop 18 and 27 drawbar horsepower, respectively, will pull two and three 14-inch plows.

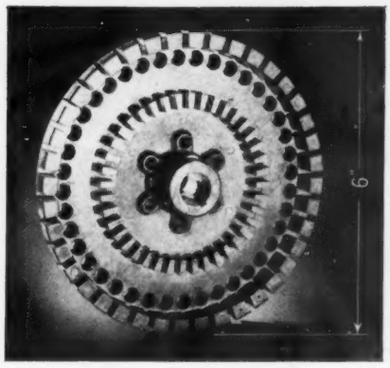
Feature of the two larger sizes is a new hydraulic power lift for tractor-mounted implements. This attachment will regulate the depth to which implements penetrate soil, lift and hold one side of the implement out of the ground while the other remains at work, or lift the front section of the implement before the rear is raised, and lower the front section before the rear portion descends.

WHY HAVEN'T *You* USED DIE CASTINGS

A "Quiz"

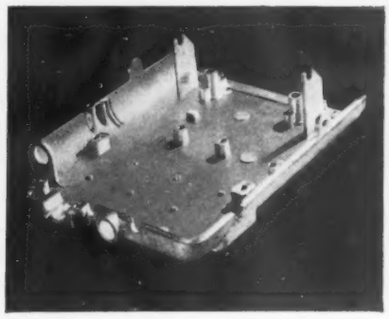
Die casting is a production method of today—and tomorrow. It has assumed the status of a major engineering practice, yet its possibilities are only beginning to be explored. Why haven't *your* products, as yet, been modernized with ZINC Alloy Die Castings?

Are you under the impression that the economies of die castings depend upon high production rates?



A The illustrated ZINC Alloy Die Cast part for a coin stamping machine has a limited production. It was recently changed from a "machined" part of another material, at a saving of $11.30 per casting.

Have you regarded die castings as a means of eliminating assembly operations?



A It is not unusual to find ZINC Alloy Die Casting applications that have saved anywhere from 1 to 10 assembly operations. Note, for example, the many mounting, positioning and fastening elements incorporated in the *one piece* casting shown here. It is a part for a radio tuning device.

Are you familiar with the range of finishes available for ZINC Alloy Die Castings—and the way they stand up?

A Here is a die cast ash tray—beautifully finished in chromium plate (it could have been finished just as easily in any of a wide variety of plated or organic coatings). Hard knocks, lighted cigarette and cigar butts make life tough for this plated coating. But, after two years, there is no sign of wear.

Did you ever consider die casting as a possible method of fabrication *before* the design of a part was completed?

A If a commercial die caster is consulted early in the design stage he can advise as to the suitability of the part as a die casting—and make minor design suggestions to minimize casting cost.

You may have questions about ZINC Alloy Die Castings that are not answered here. Why not check your present production problems against the advantages offered by the die casting process? Consult any commercial die caster—or write to The New Jersey Zinc Company, 160 Front Street, New York City.

ZINC ALLOY DIE CASTINGS

The Research was done, the Alloys were developed, and most Die Castings are specified with

HORSE HEAD SPECIAL (99.99+% Uniform Quality) ZINC

Editorial

Confidence Should Stimulate Recovery

■ A HIGHLY erroneous impression has gained ground. It is reflected by numerous newspaper editorial writers. It is to the effect that congress in its 1939 session made much progress in removing obstacles that previously had hampered business. Some editorial writers have gone on record with the ultimatum that industry now has the opportunity to drive ahead to recovery and that the blame, if it fails to do so, will be on its own head.

This is not a fair conclusion. Actually congress at the 1939 session did little to stimulate business. It failed to remove many brakes which have hampered it in the last few years. It was the costliest peacetime congress in our history.

The record of this session, it is true, is heartening. This is because congress reflected a disposition to be more friendly to business. This was shown by elimination of the last vestiges of the undistributed profits tax on corporations, by the last-minute rejection of the spend-lend program and by the setting up of recess studies of the tax system and the national labor relations board. It also was shown in the unwillingness of congress to enact any further reform legislation.

Change in Public Attitude Promises Further Move to Right in 1940

A fair judgment of the 1939 congress, with reference to business, is that of Senator George, Georgia, who, after adjournment, declared: "Business may find much encouragement in what congress did and refused to do, but it would move forward on a program of real recovery if proper amendments had been made to the labor relations act, the wage-hour act and the securities and exchange act."

If business volume over the remainder of this year should not show consistent improvement, the blame cannot arbitrarily be saddled on management. After all, the condition of the track is something over which horses in the race have no control. Much remedial legislation is necessary before the business track is in shape to encourage fast going.

At the same time, management may assume that the turn to the right which was clearly exhibited by this congress, particularly in its closing weeks, was a manifestation reflecting a renewed realization on the part of the public that individual security and business prosperity go together. On this basis they may expect the turn to the right to be expressed more forcefully at the next session. It is this line of thinking that chiefly has been responsible for the recent pronounced improvement in sentiment.

Business Morale Is at Higher Level and Confidence Can Promote Further Gain

During the recess the administration can be expected to do whatever it can to improve its impaired position. Already it accuses the majority in congress of having gambled, by killing its lending and housing measures, with the jobs of 20,000,000 Americans. This kind of talk should cause no misgivings for it does not reflect the prevailing majority sentiment.

In other words, the latest major reform period appears to be at an end, with the result that business morale is at the highest level in a decade. Industry will do well to take fullest advantage of this change, for confidence is of the very essence of recovery. An improvement of sizable proportions in the volume of business from private sources over the remainder of this year would do more than anything else to better the position of private enterprise in this country.

The BUSINESS TREND

Industrial Activity Index Is Due for Rise in September

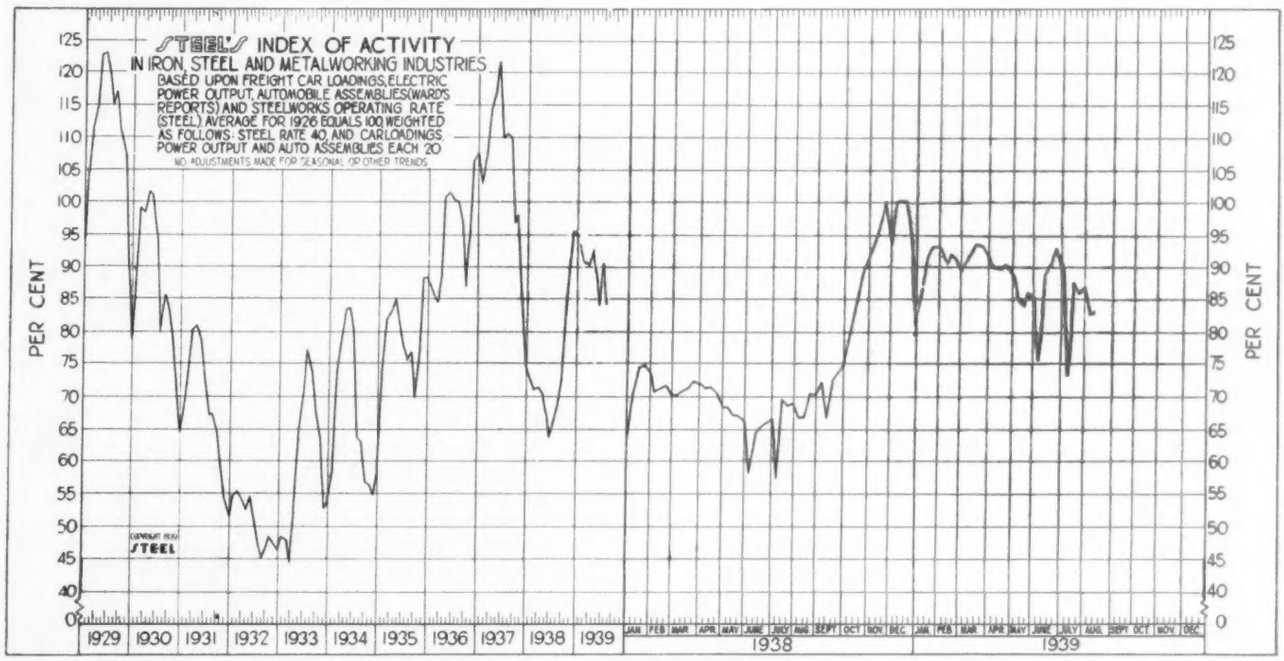
■ Industrial activity continues to manifest encouraging off-season vigor. STEEL'S index of activity in the iron, steel and metalworking industries for the week ended Aug. 12 stands at 83.8, a small gain from 83.5 in the preceding week.

Contributing to this result were moderate gains in steelworks operations and electric power output, an unchanged volume of railroad freight traffic and a further recession in automobile production.

Advancing two points to 62 per cent of capacity, steel ingot operations in the week ending Aug. 12 were at the highest level since last November. The rate a year ago was 40 per cent; two years ago 84 per cent.

Output of electric power was 2,333,403,000 kilowatt-hours, a moderate gain from 2,325,085,000 in the previous week. Revenue freight car loadings held at slightly above the 660,000-car level.

Automobile output receded to 24,875 units, of which 17,000 were accounted for by Ford. The changeover to


STEEL INDEX OF ACTIVITY
IN IRON, STEEL AND METALWORKING INDUSTRIES
BASED UPON FREIGHT CAR LOADINGS, ELECTRIC POWER OUTPUT, AUTOMOBILE ASSEMBLIES (WARD'S REPORTS) AND STEELWORKS OPERATING RATE (STEEL). AVERAGE FOR 1926 EQUALS 100 WEIGHTED AS FOLLOWS: STEEL RATE 40, AND CARLOADINGS, POWER OUTPUT AND AUTO ASSEMBLIES EACH 20
NO ADJUSTMENTS MADE FOR SEASONAL OR OTHER TRENDS
PER CENT
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939
1938
1939

STEEL'S index of activity gained 0.3 points to 83.8 in the week ended Aug. 12:

Week ending	1939	1938
May 27	85.4	66.5
June 3	75.9	58.1
June 10	88.2	64.4
June 17	90.9	65.2
June 24	93.0	66.0
July 1	91.0	66.5
July 8	73.4	57.1
July 15	87.8	69.9
July 22	86.0	68.7
July 29	86.8	69.0
Aug. 5	83.5	66.9
Aug. 12	83.8	66.9

Mo. Data	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
Jan.	91.1	73.3	102.9	85.9	74.2	58.8	48.6	54.6	69.1	87.6	104.1
Feb.	90.8	71.1	106.8	84.3	82.0	73.9	48.2	55.3	75.5	99.2	111.2
March	92.6	71.2	114.4	88.7	83.1	78.9	44.5	54.2	80.4	98.6	114.0
April	89.8	70.8	116.6	100.8	85.0	83.6	52.4	52.8	81.0	101.7	122.5
May	83.4	67.4	121.7	101.8	81.8	83.7	63.5	54.8	78.6	101.2	122.9
June	90.9	63.4	109.9	100.3	77.4	80.6	70.3	51.4	72.1	95.8	120.3
July	83.7	66.2	110.4	100.1	75.3	63.7	77.1	47.1	67.3	79.9	115.2
Aug.	....	68.7	110.0	97.1	76.7	63.0	74.1	45.0	67.4	85.4	116.9
Sept.	....	72.5	96.8	86.7	69.7	56.9	68.0	46.5	64.3	83.7	110.8
Oct.	....	83.6	98.1	94.8	77.0	56.4	63.1	48.4	59.2	78.8	107.1
Nov.	....	95.9	84.1	106.4	88.1	54.9	52.8	47.5	54.4	71.0	92.2
Dec.	....	95.1	74.7	107.6	88.2	58.9	54.0	46.2	51.3	64.3	78.3

1940 production is progressing steadily. Last year in the comparable week assemblies totaled only 13,790.

Present indications point to an upward trend in the activity index during the late summer and early fall. Increasing automobile output, as more companies swing into production of 1940 models, probably will more than offset any fluctuations in the other three barometers comprising STEEL's index.

The normal peak of railroad freight traffic usually comes in October. In 1938 the highest point in steelworks operations occurred in November and at present there is nothing to suggest that the peak will arrive before that time this year. Electric power output always surges upward steadily from July to an annual pinnacle in December.

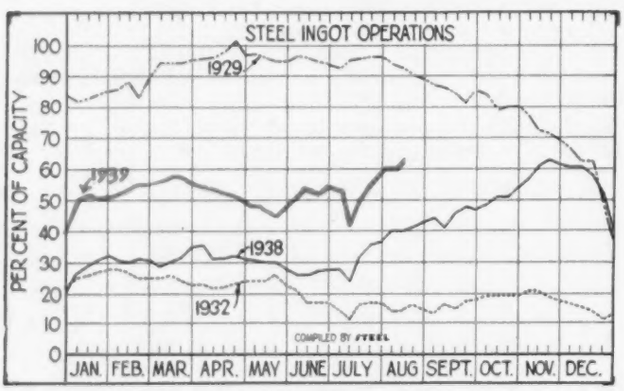
Thus, on the basis of normal trends, there is a strong possibility that STEEL's index will rise appreciably before the end of the present quarter.

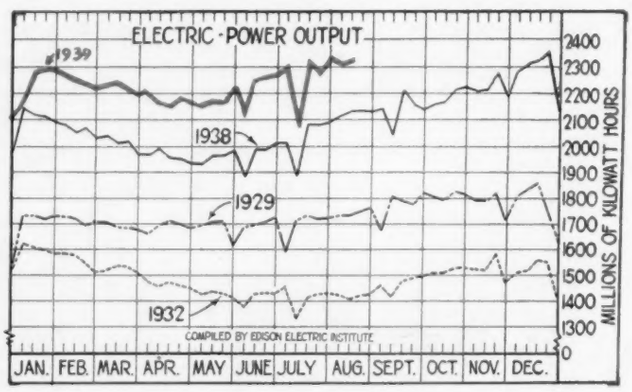
MACHINE TOOL INDEX UP SHARPLY IN JULY

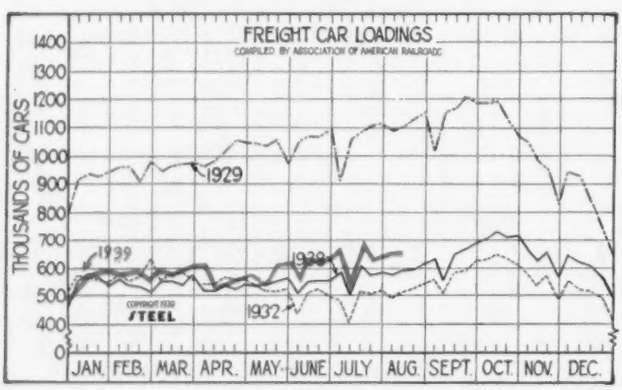
According to the monthly report of the National Machine Tool Builders association, the index of new machine tool orders in July advanced to the highest level since April, 1937. The index rose to 230.9, a gain of 19.3 points from June. In July last year the index stood at 89.6. The index for July, 1939, has been exceeded only three times since the association began compiling the orders index in 1919. The three months moving average of orders rose from 195.7 in June to 220.8 in July. May and June in 1937 were the only previous months in which the moving average has exceeded the current July figure.

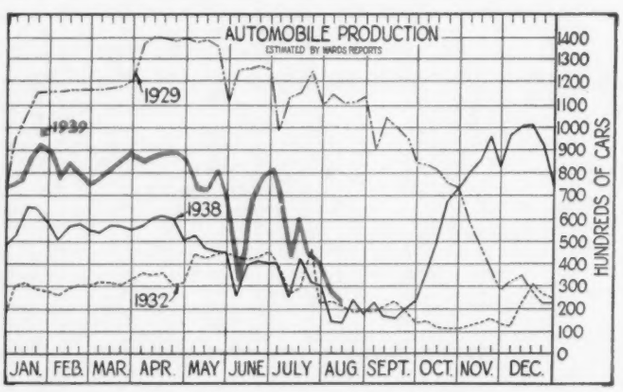
FOUNDRY EQUIPMENT INDEX IS LOWER

New foundry equipment business, as reflected by the index of net orders compiled by the Foundry Equipment Manufacturers' association, declined moderately in July. The index for that month stands at 111.9, compared with 134.6 in June, 1939 and 74.2 in July last year. The index of shipments was 135.5 in July compared with 148.5 in June, and that of unfilled orders 135.6 in July as against 159.2 in June. While the curve of foundry equipment orders has fluctuated with uncertain trend since early in 1938, it has indicated a mild upward tendency during the past 12 months.

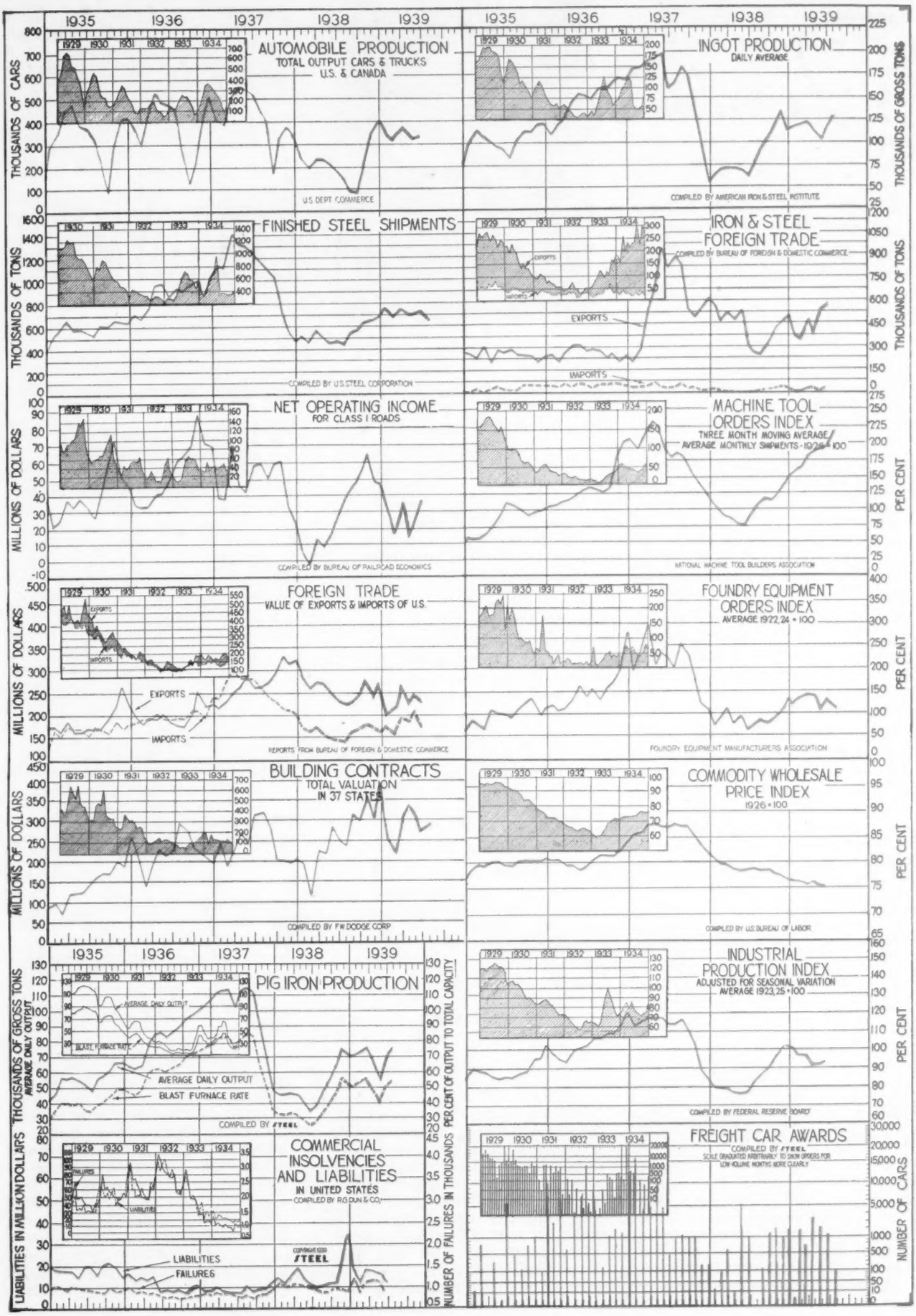




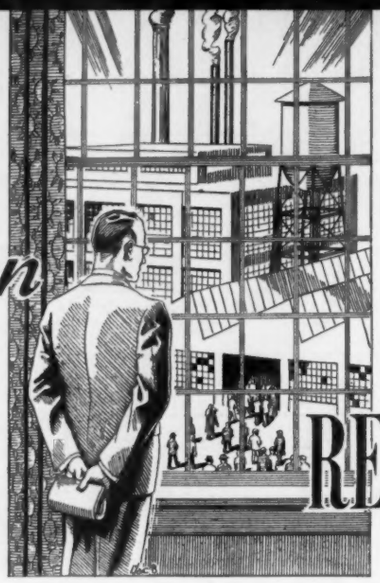




Week ending	Steelworks Operating Rate Per Cent 1939	1938	1932	1929	Electric Power Output Million KWH 1939	1938	1932	Freight Car Loadings Thousands of Cars 1929	1939	1938	1932	1929	Weekly Auto Output 1939	1938	1932	1929
Apr. 29	49.0	32.0	24.0	101.0	2,183	1,939	1,445	1,700	586	543	554	1,052	86,640	50,755	31,121	139,732
May 6	49.0	31.0	24.0	97.0	2,164	1,939	1,429	1,688	573	536	534	1,050	71,420	53,385	43,899	140,672
May 13	47.0	30.0	24.0	97.0	2,171	1,968	1,436	1,698	555	542	517	1.048	72,375	47,415	42,587	138,541
May 20	45.5	30.0	25.5	96.0	2,170	1,968	1,435	1,704	616	546	516	1,046	80,145	46,810	43,470	139,528
May 27	48.0	28.5	23.0	95.0	2,205	1,973	1,425	1,705	628	562	521	1,061	67,740	45,120	45,121	136,032
June 3	52.0	25.5	21.0	95.0	2,114	1,879	1.381	1,615	568	503	447	972	32,445	26,980	44,116	111,372
June 10	53.5	25.5	17.0	96.5	2,257	1,992	1,435	1,690	635	554	502	1,055	65,265	40,175	43,491	125,307
June 17	52.5	27.0	17.0	96.0	2,265	1,991	1,441	1,699	638	556	518	1,069	78,305	41,790	44,121	126,125
June 24	54.5	28.0	17.0	94.0	2,285	2.019	1,440	1,723	643	559	499	1,096	81,070	40,918	45,110	125,736
July 1	54.0	28.0	14.5	93.0	2,300	2,015	1,456	1,592	666	559	480	909	70,663	40,945	40,291	98,746
July 8	42.0	24.0	12.0	95.0	2,078	1,881	1,341	1,712	559	501	416	1,065	42,784	25,375	26,560	113,586
July 15	50.5	32.0	15.5	95.5	2,234	2,084	1,415	1,727	674	602	504	1,079	61,610	42,010	29,870	115,075
July 22	56.5	36.0	16.5	96.0	2,295	2,085	1,433	1,723	657	581	502	1,101	47,420	32,070	46,375	123,512
July 29	60.0	37.0	16.5	96.0	2,342	2,094	1,440	1,725	660	589	511	1,104	40,595	30,390	22,461	110,163
Aug. 5	60.0	40.0	14.5	94.0	2,325	2,116	1,426	1,730	661	584	497	1,091	28,250	14,771	23,591	114,364
Aug. 12	62.0	40.0	14.5	93.0	2,333	2,134	1,415	1,733	661	589	512	1,100	24,875	13,790	21,162	111,939


AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS U.S. & CANADA
U.S. DEPT COMMERCE
THOUSANDS OF CARS
INGOT PRODUCTION
DAILY AVERAGE
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
THOUSANDS OF GROSS TONS
FINISHED STEEL SHIPMENTS
COMPILED BY U.S. STEEL CORPORATION
THOUSANDS OF TONS
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMESTIC COMMERCE
EXPORTS
IMPORTS
NET OPERATING INCOME
FOR CLASS I ROADS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MILLIONS OF DOLLARS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS - 1926 = 100
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
PER CENT
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922-24 = 100
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
BUILDING CONTRACTS
TOTAL VALUATION IN 37 STATES
COMPILED BY F.W. DODGE CORP.
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
COMPILED BY U.S. BUREAU OF LABOR
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1923-25 = 100
COMPILED BY FEDERAL RESERVE BOARD
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
COMPILED BY STEEL
THOUSANDS OF GROSS TONS AVERAGE DAILY OUTPUT
PER CENT OF OUTPUT TO TOTAL CAPACITY
COMMERCIAL INSOLVENCIES AND LIABILITIES
IN UNITED STATES
COMPILED BY R.G. DUN & CO.
LIABILITIES
FAILURES
COPYRIGHT 1939 STEEL
LIABILITIES IN MILLION DOLLARS
NUMBER OF FAILURES IN THOUSANDS
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARBITRARILY TO SHOW ORDERS FOR LOW-VOLUME MONTHS MORE CLEARLY
NUMBER OF CARS

Forum on RE-EMPLOYMENT



■ In this Forum article, a well-known authority states that the problem of providing jobs primarily is complicated by the steadily growing additions to our country's potential labor force, due to its increasing population. This contributor contends that all other sources of unemployment are insignificant in comparison. He presents convincing charts in support of his theory. He believes that only by a long and sustained rise in business activity can still further increases in unemployment be averted.

In view of the unsettled state of business, this view of the situation may not be overly encouraging. However, this article certainly does focus attention on a highly important factor in the problem and it should serve to emphasize the need for further concentration of effort toward rapid development of every possible worthwhile job-creating activity.

The author is Col. R. R. Lutz, director, statistical division, National Industrial Conference Board, Inc., New York. In addition to his ten years of service with the board, Col. Lutz has also had many other unusual opportunities both as an army officer and as a business man for observing and studying at first hand the intricate features of this general problem—including the human elements involved.

Col. Lutz served in the Spanish-American and in the World wars. His first association with the Conference board was in 1920, as chief statistician, in New York. Subsequently, he spent four years as the board's representative in Washington. Following a period as colonel of the Insular Police in Porto Rico, his next affiliation with the board was in New York in 1934, at which time he assumed his present position.

—*The Editors*

■ THIS ARTICLE labors under the disadvantage that the text does not fit the title, for the reason that what I have to say deals with the problem of "unemployment" rather than "re-employment." This is so because, as I see it, the problem does not consist so much in re-employing workers formerly employed, as it does in taking care of the constantly growing additions to the labor force due to population increase.

This source of unemployment, frequently ignored in discussions of the subject, is extremely important, so much so that all other possible sources dwindle into insignificance beside it. It is customary to measure the extent of unemployment by comparing the current figures with those for 1929. It is not generally realized, however, that had there been no increase in the population from 1929 to 1937 the unemployment in the latter year would have been less than the normal unemployment, estimated at approximately 4½ per cent of the total labor force.

Fig. 1 presents a graphic picture of the unemployment situation from

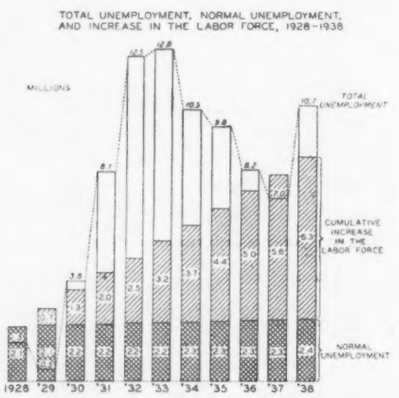

TOTAL UNEMPLOYMENT, NORMAL UNEMPLOYMENT, AND INCREASE IN THE LABOR FORCE, 1928-1938
MILLIONS
TOTAL UNEMPLOYMENT
CUMULATIVE INCREASE IN THE LABOR FORCE
NORMAL UNEMPLOYMENT
1928 '29 '30 '31 '32 '33 '34 '35 '36 '37 '38

Fig. 1—Total unemployment, normal employment and increase in the labor force, 1928-1938

1928 to 1938. The cross-hatched portion at the bottom of the chart shows estimated normal unemployment in each year, comprising those out of work because of incapacity, incompetence, illness, seasonality, and also the voluntarily idle.

The line shaded portion shows the cumulative increase of the yearly additions to the labor force due to the growth of population. It amounts to about 600,000 new workers each year. The figure in italics connected by the dotted line indicate the total unemployment in each year.

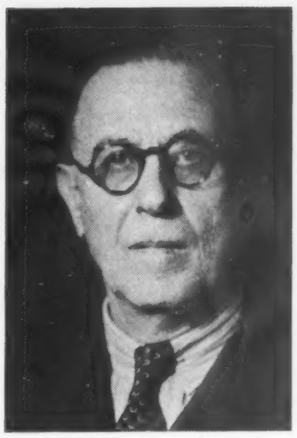
In 1928 total unemployment was less than the estimated normal unemployment. In 1929 employment absorbed the increment of new workers that year, while unemployment dropped to about one fourth of the estimated normal. In 1930 unemployment reached a level slightly

above the combined total of normal unemployment and new workers. Unemployment increased until in 1933 the average for the year reached a total of 12,800,000, or 10,600,000 above the estimated normal for that year. In the succeeding recovery, unemployment declined until in 1937 the average was 7,000,000. But even at this level the improvement in employment was not sufficient to cover more than a small proportion of the cumulative increase of new workers. Average unemployment in 1938 reached 10,700,000, or 8,300,000 above the estimated normal for that year.

New Workers Every Year

The steady increase in the size of the labor force accounts for the anomaly that an increase of a given amount in employment is not reflected in an unemployment decrease in the same amount. From 1933 to 1934 there was an increase of 2,844,000 in employment, but the decrease in unemployment during the year amounted to only 2,250,000. The difference of 594,000 approximated the number of new workers added to the labor force that year. The difference between the increase in employment and the reduction in unemployment in each of the following two years similarly was about the same as the increase of new workers. In 1938 there occurred a drop in employment amounting to 3,026,000, while unemployment increased 3,666,000. Here again the difference corresponds closely to the yearly increase in the total labor force.

How far the growth in the fields of production and distribution has fallen behind the growth in population during the past eight years is indicated graphically in Fig. 2. This chart represents the index of production and trade, compiled by the Federal Reserve bank of New York. It covers a very wide field and includes—in addition to production—transportation, exports and imports, retail trade and communication, with a considerable number of miscellaneous items of lesser importance as indicators of general business activity.



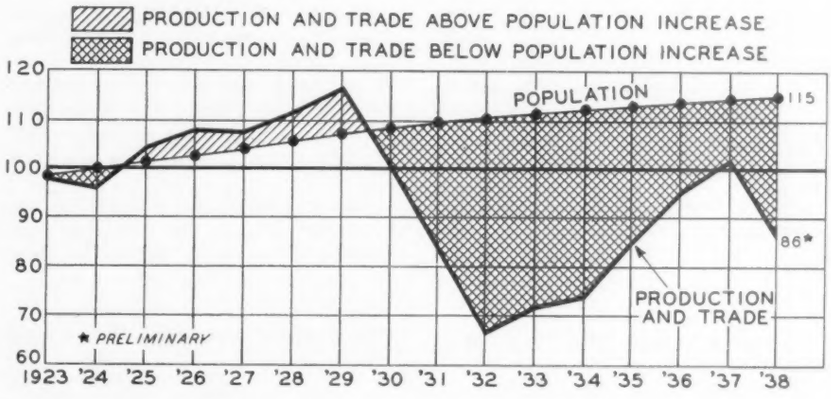
Col. R. R. Lutz
Director, Statistical division
National Industrial Conference Board
New York

Constant Rise in Population

The ball-and-chain line represents the index of population. Note that by 1938 the rise in the population index coincided closely with the 1929 level of production and trade, while the latter in 1938 was 25 per cent below the population index. Even in 1937, best year of the recovery, index of production and trade only reached about the average in 1923-25, while the population index showed a gain over the same period of 14 per cent.

Mere maintenance of a stable level of employment is not enough. Studies of population statistics indicate that the rate of population increase is declining. But for a good many years to come a continuing rise in business activity is the only way by which a further increase in the volume of unemployment can be prevented.

Fig. 2—Volume of production and trade compared with population increase. Index numbers, 1923 — 25 = 100



Coal Is Made Dustless By Treatment with Oil

■ Information that dust from coal need no longer cause annoyance or damage in the home or industrial plant is contained in a 36-page report, "Treatment of Coal with Oil and Other Petroleum Products," by J. M. Pilcher and R. A. Sherman, fuel research engineers, Battelle Memorial institute, Columbus, O. Issued as technical report No. VI of Bituminous Coal Research Inc., the publication is based on results of a two and one-half year program of research.

Petroleum oils and blends of oil with wax and with asphalt are eminently suitable materials for treatment of coal to allay dust, says the report, because the materials stick the fine pieces together so that they cannot fly about not only when first applied but over long periods of time. To obtain proper treatment with a minimum of expense and to obtain permanence of treatment, proper type of oil must be used. This is not the same for all types of coals as was believed when oil was first used for treatment some years ago.

Low-volatile coals, such as Pocahontas coals from West Virginia, are treated almost equally well with light and heavy, that is, low or high viscosity oils. High volatile coals from West Virginia, Kentucky, and Pennsylvania, on the other hand, are somewhat better treated with higher viscosity oils, and coals from Indiana, Illinois and the far West require heavy, highly viscous oils or blends of oil and wax, or of oil and asphalt.

In addition to extensive data on the relation of type and amount of oil to reduction in dustiness for various types and sizes of coal which the report gives, data are presented that show that treatment of coal with oil has no appreciable effect on performance of coals on residential underfeed stokers, that oil reduces difficulty with freezing, that it reduces retention of surface moisture, and that it does not increase but may decrease tendency of stored coal toward spontaneous heating.

According to the authors, this report should prove invaluable to producers of coal and refiners of oil and the application of the information it contains should increase even more rapidly the marked trend in recent years toward marketing clean coal for both industrial and domestic use.

Copies of the report may be obtained without charge from Bituminous Coal Research Inc., 803 Southern building, Washington; Standard Oil Co. of New Jersey, 26 Broadway, New York; Sun Oil Co., Philadelphia; or Viking Mfg. Co., Jackson, Mich., research sponsors.

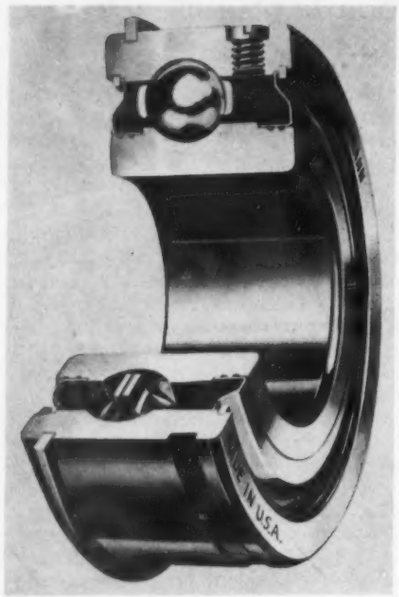


Fig. 1—Cross section through new cartridge unit

Application of Cartridge

Self-sealing antifriction bearings protect balls and races during assembly, also when disassembled for servicing. In addition, they contain ample supply of grease. Important improvements are afforded by new units described here

By D. E. BATESOLE
Chief Engineer
Norma-Hoffmann Bearings Corp.
Stamford, Conn.

■ AMONG antifriction bearings with seals, possibly the "cartridge" type has received the most attention in recent years because of its many advantages. Not only does this bearing carry its own in-built seal affording an extra large grease supply, but it is so completely protected that this grease cannot escape, regardless of shaft position, nor can the grease become contaminated in event the equipment is disassembled for servicing.

Eliminates Extra Parts

Ease and simplicity of mounting are advantages of the cartridge type bearing emphasized in Fig. 5. Here, the lefthand drawing shows a motor housing using a plain ball bearing, with the external sealing and protective parts required. Righthand drawing, Fig. 6, shows how the cartridge type bearing is mounted in a similar housing. Comparison of these two sections shows how the cartridge type bearing not only eliminates a number of extra parts but also does away with many costly machining operations—the heavy black lines marking the machined surfaces needed in the two cases.

Fig. 10 shows the rotor of a motor equipped with cartridge bearings, removed from frame and housing. Note the two bearings remain upon the shaft—still fully protected by their in-built seals against shop dirt and foreign matter.

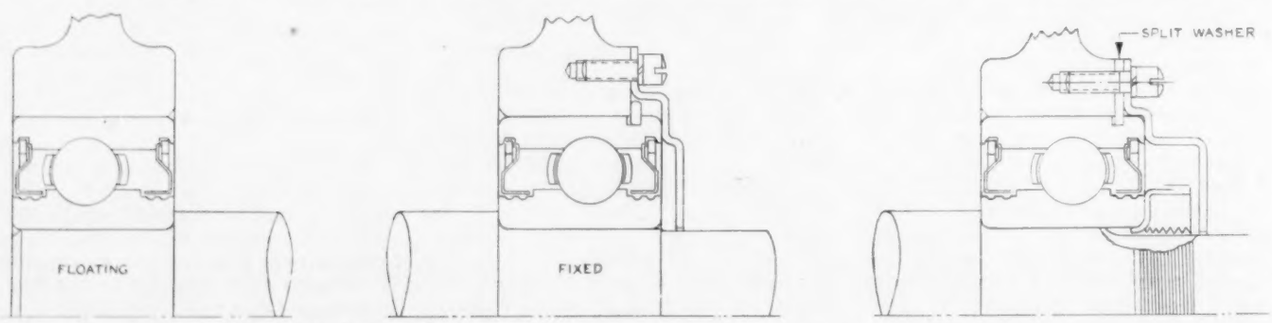
Improved design of cartridge ball bearings aimed primarily toward adequate protection combined with greater simplicity and economy in mounting, is responsible for the rapidly increasing adoption of this bearing type. Chief among these detailed improvements is the special metal seal employed, with its long inwardly - extending flange and grease grooves in the recessed inner ring forming a labyrinth which retains the grease within the bearing, even at high speeds and with shaft vertical. Construction of this sealing arrangement is shown clearly in Fig. 1.

An important advantage of this cartridge seal is the fact that it is equally effective whether the shaft

Fig. 2—Floating type of mounting

Fig. 3—Fixed type using snap ring

Fig. 4—Fixed type using split washer



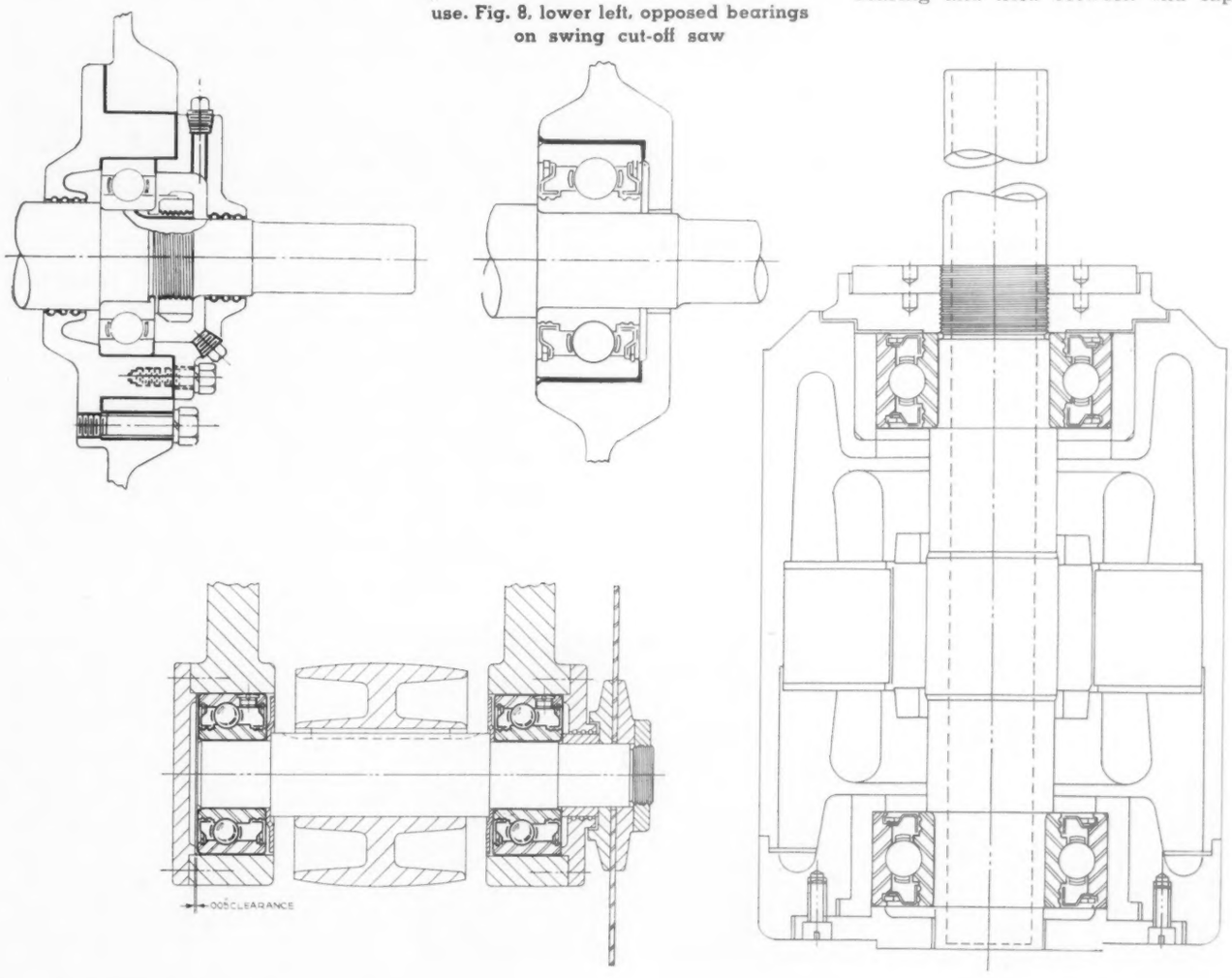
FIXED AND FLOATING TYPE MOUNTING

Type Ball Bearings

be horizontal or vertical. Fig. 7 shows a vertical motor that operates at 10,800 revolutions per minute on its cartridge type bearings without any grease leakage whatever and with no supplementary closures of any kind. A large number of these motors are operating continuously in 24-hour service. One motor manufacturer, using cartridge bearings in vertical motors running at 1200 revolutions per minute, reports that after 4½ years of daily operation the original lubricant is still in them and there is no indication that additional grease will be required except, possibly, after another long period of service. There has been no noticeable grease leakage.

Although originally designed for electric motors, the cartridge type ball bearing has been adopted in many other fields. Fig. 8 shows a typical mounting for a swing cut-off saw in which the bearings are mounted in opposed position with 0.005-inch minimum endwise clearance to permit shaft expansion. Fig. 9 shows an opposed mounting in a centrifugal pump where cartridge bearings carry the overhanging rotor. In this case, grease fittings connecting with the grease opening in the bearings provide means of adding more grease if required.

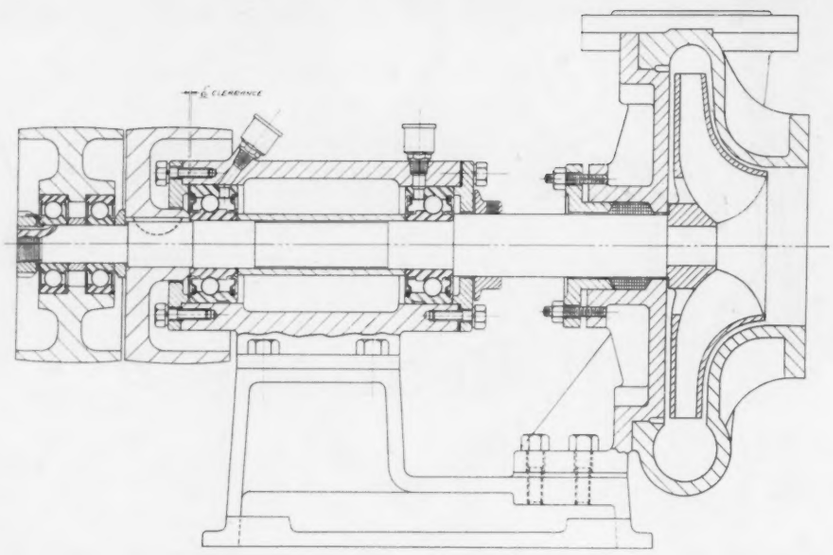
Fig. 5, upper left, and 6, center, contrast amount of machined surfaces required. Fig. 7, right, vertical rayon motor operating at 10,800 revolutions per minute. Some 2000 are now in use. Fig. 8, lower left, opposed bearings on swing cut-off saw



Mounting Is Easy

Fig. 3 shows cartridge type bearing with "snap" shoulder ring for mounting in through bore housings. Figs. 2 and 3 illustrate "fixed and floating" mountings. In Fig 3, the righthand bearing shoulder ring is clamped between the pressed metal end cap and the face of the housing. The other bearing, Fig. 2, "floats" in the housing. Fig. 4, at the right, shows a split washer inserted in the shoulder ring groove of the bearing and held between end cap

Fig. 9—Opposed bearings in centrifugal pump carrying overhanging loads



and housing face. This arrangement permits easy removal of the bearing after the split washer has been lifted from the groove.

Such applications as are here described, and particularly the vertical units, are largely dependent for success upon a new type of cartridge bearing. These units, although of single-row type, have inner and outer races of same width as standard double-row metric ball bearings. The extra space thus secured permits more effective sealing and affords a larger volumetric grease capacity within the bearing itself. This obviates many serious difficulties encountered with some narrower types of completely sealed bearings. Grease is specially prepared and pretested to resist hardening and change in consistency throughout long periods of operation and has exceptional stability against oxidation.

Use Long Flanges

Seals of the bearing are of unusual design with long, inwardly extending flanges having a close running clearance in the ground recesses of the inner ring. Two or more grease grooves in these recesses provide an added barrier against escape of grease and the ingress of dirt or foreign matter. The seals are held tightly in the outer ring by snap wires which can be lifted easily from their grooves, permitting quick and easy removal of the seals for inspection, cleaning or regreasing.

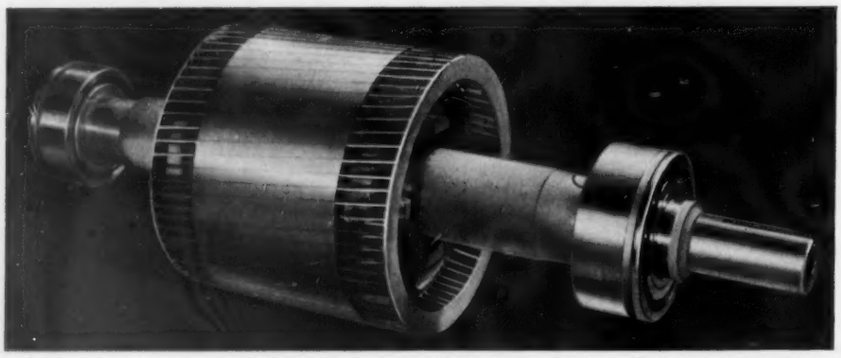
A grease refilling plug is provided in outer ring to facilitate renewal of lubricant. Some users prefer to omit the grease plug and to introduce grease to the bearing through an opening in the housing. As the grease opening in the bearing may not always coincide with the grease opening in the housing, a grease distributing groove is provided around the outer periphery of the outer ring. Thus, grease will always reach the interior of the bearing regardless of the position of the latter in the housing.

Where it may be desirable to machine the housing with a through bore, the snap shoulder ring on the bearing takes the place of a shoulder in the housing to give the necessary location of the outer ring.

Eliminates Threaded Shaft

The extra double-row width of this cartridge type ball bearing makes it possible, in many cases, to do away with the threaded shaft and lock nut, often considered necessary to clamp the inner ring rigidly against a shaft shoulder. Here, extra width provides a secure sealing of the inner ring without danger of slippage, cocking, or peening. With this bearing, shaft contact area is from 55 to 90 per cent greater than that with a standard single-row bearing. This elimination of the shaft lock nut not only permits a stronger shaft (about 10 per cent greater in cross-section) but also permits applying the bearing much closer to the load.

Fig. 10—A motor rotor equipped with cartridge bearings of the completely sealed type has bearing balls and races amply protected even during disassembly as shown here



Blast Cleaning Manual First To Cover Field

■ *Modern Blast Cleaning and Ventilation,* by C. A. Reams; cloth, 213 pages, 6 x 9 inches; published by Penton Publishing Co.; supplied by STEEL, Cleveland, for $4; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S.W. 1.

The author sets forth that blast cleaning is an outgrowth of the crude sandblasting methods of a few years ago and that the process by present day methods is of vital importance to those interested in economical production in foundries and metalworking plants where economical cleaning methods are imperative. The present volume is the first of its kind covering the entire field of blast cleaning and its equipment.

The author writes from practical experience and has relied on actual blast cleaning operations as performed in modern plants. Latest developments in air and centrifugal wheel blasting are illustrated and described. The subject of adequate ventilation, without which blast cleaning would be impossible on a sanitary basis, is treated exhaustively.

The author divides his book into 35 chapters with 39 illustrations and 28 tables. The tables are a valuable addition as they contain data not otherwise available in convenient form. While the book is a practical work, the theoretical side has not been neglected, as numerous formulas are given.

An appendix contains interesting blast cleaning "don'ts," a list of uses for blast cleaning equipment, a glossary of blast cleaning terms and a table of fan efficiency curves. The book is completely cross-indexed.

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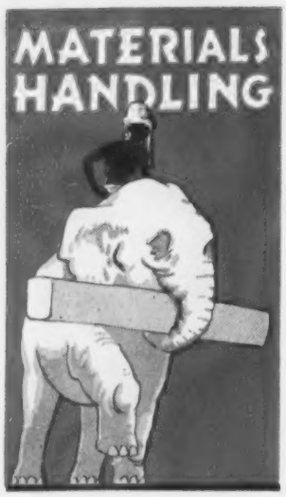


Built-In Handling

Auxiliary equipment moves dies and work rapidly through press to greatly reduce loading and unloading time, permitting press ram to be in almost continuous operation. This gives large output from machine

■ AN EXCELLENT example of how materials handling devices are being incorporated in modern machines to speed up production and thus obtain a larger return from the investment necessitated by some of these large production units is seen in several large presses recently built by Baldwin-Southwark Corp., Eddystone, Pa. Such built-in or auxiliary handling equipment often makes possible sufficient added output from a costly machine to warrant its use where otherwise it would not be justifiable economically.

Due to impetus provided by world-wide rearmament programs, the aircraft industry is emphasizing improved production methods. It already has learned much from mass production methods of the automobile industry. Now it is developing some new methods of its own, the multiple forming of parts with rubber dies being a good example.

Earlier methods of fabricating metal parts were extremely costly since it was necessary to shape parts over molds or dies in mechanical presses or drop hammers. This was for the reason that the number of parts required was usually limited.

The problem of producing parts at materially lower costs has been met through the development of highly efficient presses, served by automatic handling equipment and inexpensive dies. The Southwark division of the Baldwin-Southwark Corp. recently delivered three 5500-ton presses especially designed for producing duralumin aircraft parts. These presses are among the largest ever built, standing 33 feet high and weighing approximately 960,000 pounds each. The cast steel platens alone weigh 148,000 pounds each.

Completely Automatic

Presses are completely automatic, having control of pressure, operating speed and length of stroke. Semi-automatic or manual operation also is made possible when production does not justify fully automatic performance.

The complete power unit, control gear and operating valves are supported on the pump platform 30 feet long by 23 feet wide at the top of the press. The machine is operated by two rotary type piston pumps delivering 350 tons pressure, requiring two 400-horsepower motors.

The main filling check valves on top of the main cylinders admit oil to the cylinders during the idle down stroke. The check valves are 18 inches in diameter and require hydraulic cylinders of 300-tons capacity to lift the valve off their seats against 300 pounds fluid pressure.

Essentially, each press has a stationary bed or base, a subplaten, movable horizontally over the bed

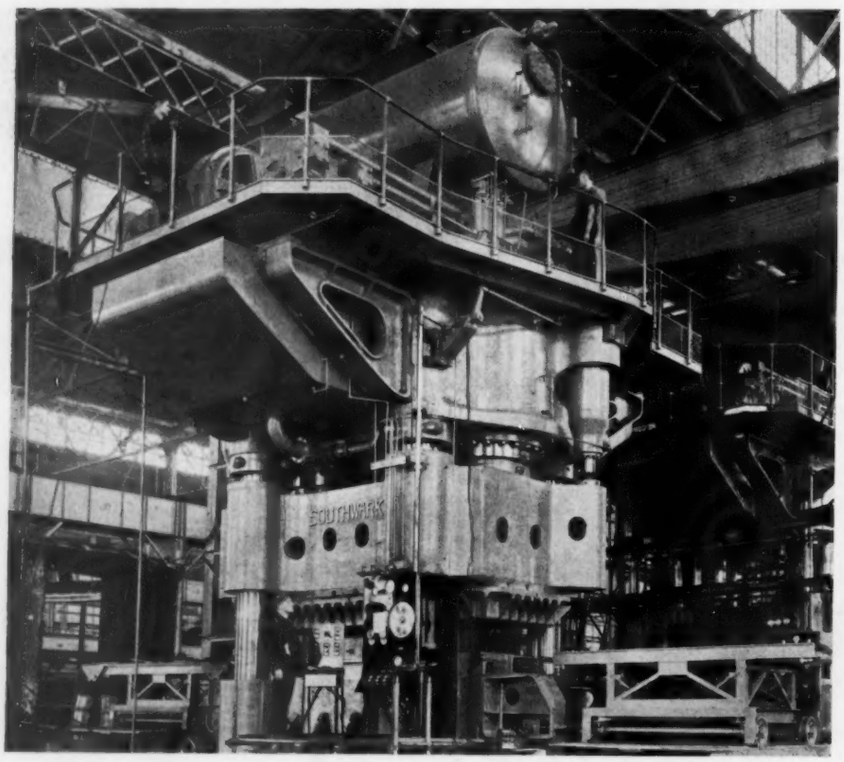
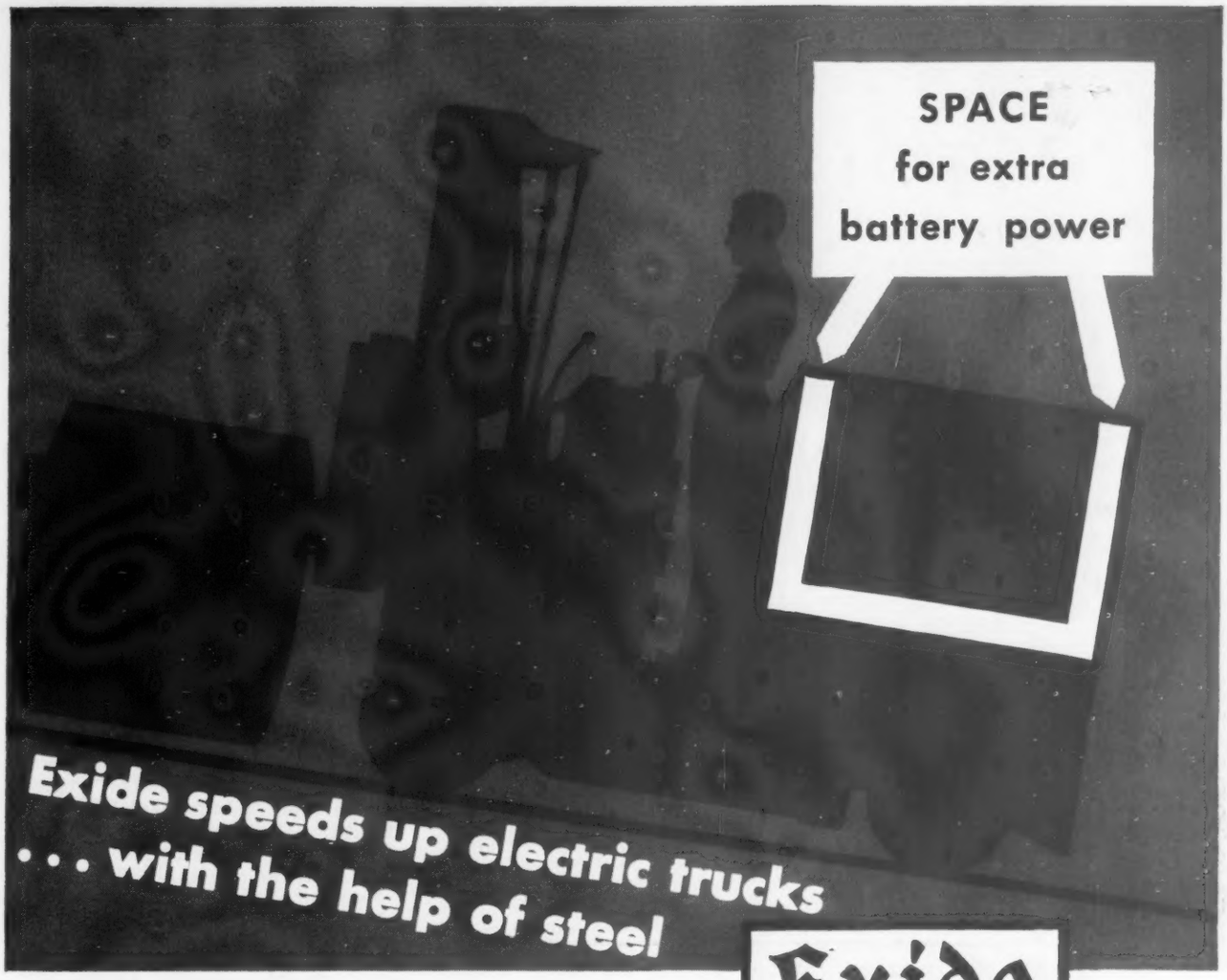


Fig. 1—Press setup in Baldwin-Southwark shop. In operation, subplatens with dies and work in position come to and go from the press on rail cars shown here at both entering and exit sides of press. Cars have lengths of roller conveyor on top to facilitate movement in and out of press



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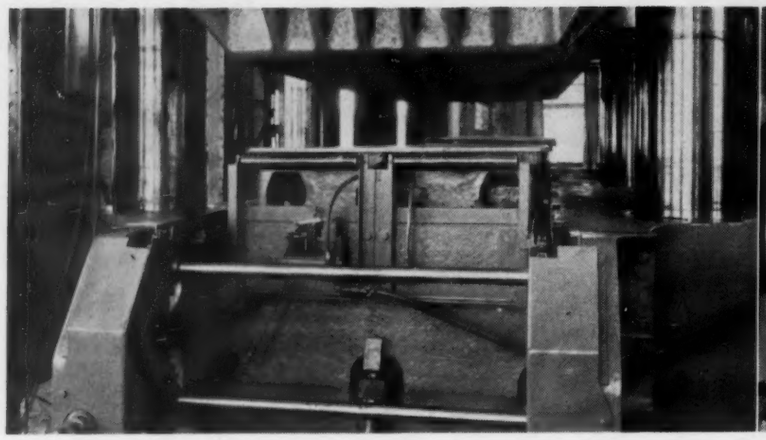


Fig. 2—Exit side of press with unloading car removed. Note endless conveyor chains at each side of platen to carry subplatens in and out of press

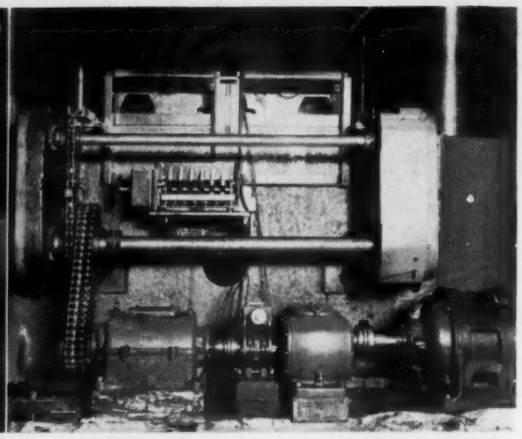


Fig. 4—Entry side of press showing conveyor chain drives. During loading, car with subplaten, dies and work is moved in line with press

and a hydraulically operated head, movable up or down for applying pressure to the duralumin sheet mounted over male dies on the subplaten. The moving down platen or operating head carries a rubber pad 157 inches long, 57 inches wide and 12 inches thick for forming several aircraft parts in one single down stroke. To localize the force over certain parts of these dies, additional rubber mats are placed over the dies themselves.

The subplaten is arranged on a truck equipped with an antifriction roller table. The truck or car is moved on a track, Fig. 1, up to the receiving side of the press, and as soon as it is positioned, the operator pushes a button which starts the press feeder conveyor, comprising two strands of roller chain. Dogs on the chain ,Figs. 2 and 4, engage projections on the subplaten, drag the subplaten off the roller table and automatically stop the subplaten in exactly the proper working position. A center groove in the track bed aids in positioning the subplaten.

Drive end of the feeder conveyor, Fig. 4, is operated from a separate five horsepower motor through a Link-Belt P.I.V. gear variable speed transmission unit, herringbone gear speed reducer and a double width roller chain drive through the conveyor head shaft. The variable speed transmission unit permits positive, infinitely variable control of the speed of conveyor to suit specific operating conditions, the size and nature of the part being produced, etc.

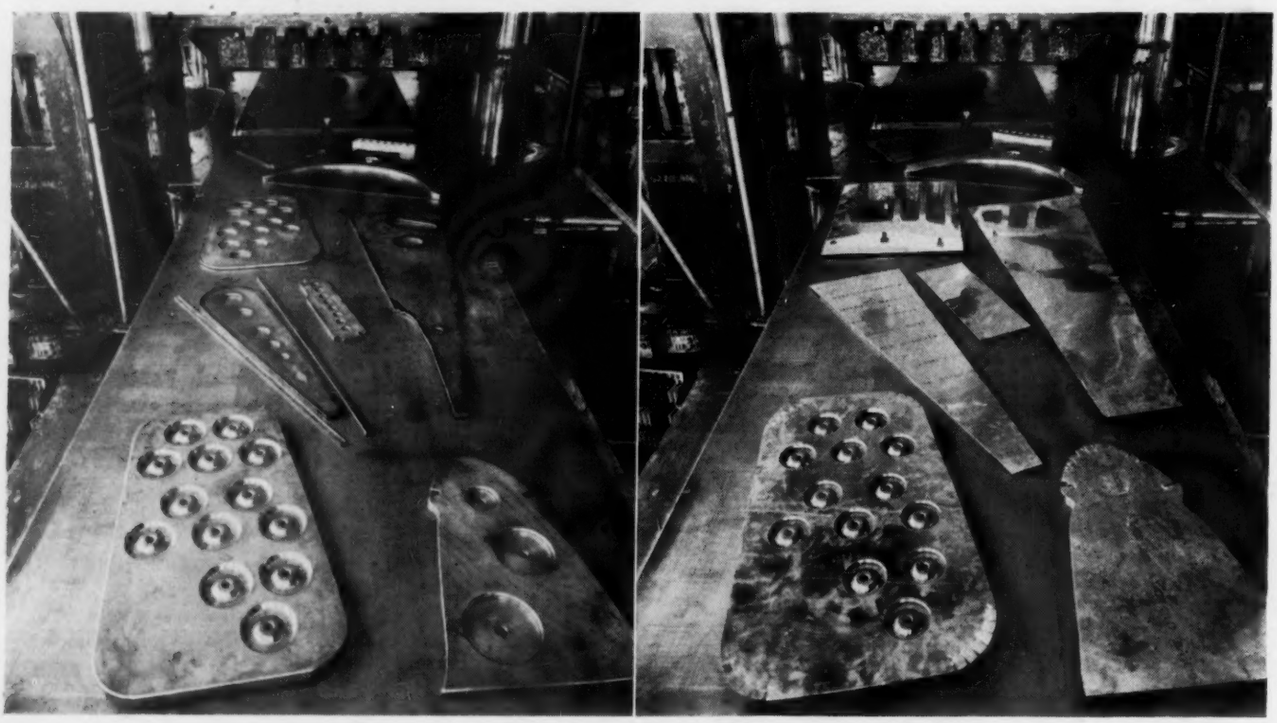
The mechanism for operating the conveyor also operates a special electrical device which accelerates and decelerates the subplaten at the beginning and end of its travel and a micro-switch stops the motor and set the motor brake ,at the same time lighting an indicating light.

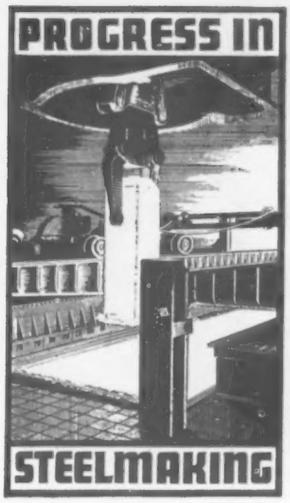
There is an interlock between the conveyor and the press control

(*Please turn to Page* 63)

Fig. 3—Subplaten with dies in position but without blanks. Compare with Fig. 5

Fig. 5—Here aluminum blanks have been placed on dies. In operation, blanks are in place when subplaten reaches press





Pickle-Tank Control

Potentiometer control substantially reduces maintenance costs, holds solution temperatures within 2 or 3 degrees Fahr. to give better pickling at high speeds. Also permits power economies and lessens damage from accidents

■ PICKLING lines at Yorkville plant of Wheeling Steel Corp. have been rebuilt a number of times with a view to modernizing and at the same time increasing the speed to keep pace with increases in production of tandem cold-reducing mills. Original pickling line installed in 1927 was one of the first continuous pickling installations and included three 50-foot wood acid tanks and one 15-foot rinse tank. Maximum speed of this pickling line was 57 feet per minute.

At that time, the art of modern continuous pickling practice was practically unknown, and rule-of-thumb methods prevailed. These first wood tanks were later lined with lead and speed increased. Present two pickling lines include four 60-foot acid tanks and one cold water and one hot water tank, each 25 feet long. These tanks are constructed of ⅜-inch steel plate lined with live acid-proof rubber which is protected from abrasion by an additional lining of acid-resisting brick and basolit cement.

Pickling Speeds Increase

Present speed of these lines is 250 feet per minute, a great gain over the original rate of 57 feet per minute. Latest addition to improve operation of these lines consists in an installation of automatic pickle-tank temperature control which has been found to effect a number of important improvements.

Both acid and hot water tanks are heated by means of steam jets which discharge into the solution. These steam jets are designed to act as syphons, and thus cause considerable circulation of the solution, which materially assists pickling action. Also, condensed steam makes up to a certain extent for evaporation of the solution.

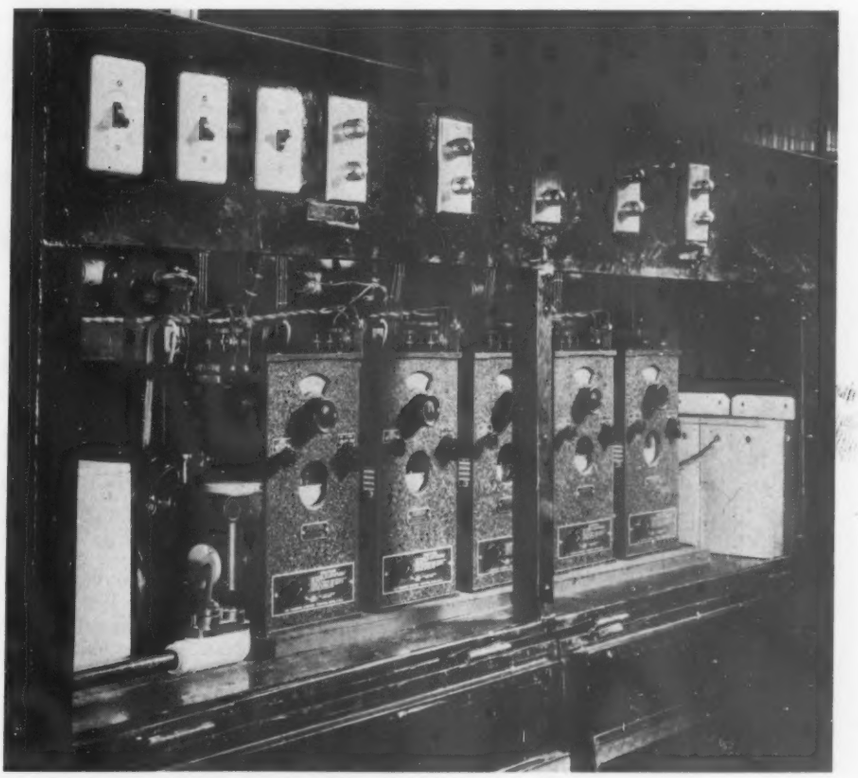
Thermometer type or air-operated controllers originally were used to regulate the steam supply to the steam jets, thus controlling automatically the temperature of the solution. A separate control unit including a gas-filled, acid-resisting bulb with tubing, combination controller and temperature recorder and diaphragm-operated steam valve was provided for each tank. With this type of control, it is necessary to mount the controlling and recording instruments close to and opposite the center of each tank where a bulb is located.

Installation of the new controllers shown in the accompanying illustration was found to eliminate a number of disadvantages which had been experienced with the air-operated or thermometer type controller units.

Air Controllers Replaced

The new controllers are potentiometer type. The diaphragm-operated steam valves were replaced with positive motor-operated steam valves. After installation of the potentiometer controllers on one line, improvements were so marked that it was decided to replace the air-operated controllers on other pickling lines also.

Results have been most satisfac-



Automatic recording and controlling instruments in potentiometer control system are grouped in this case

tory. Previously, high maintenance costs were encountered due to necessity of cleaning out air strainers; thawing out frozen air lines in winter; overhauling controls and valves periodically; and necessity of sending the complete instrument back to factory for repairs whenever bulb or tubing was damaged.

Being controlled electrically, new units eliminate all previous difficulties encountered from frozen air lines and valve operating mechanism. Also, much better control of temperature now is possible. Previously, when an air line or valve mechanism froze, it caused the control valve to shut off. Under such conditions, temperature of the solution quickly dropped to a point where no pickling action was obtained. This generally resulted in much dirty steel before the condition could be corrected. Locating and thawing out the frozen lines and mechanisms usually consumed several hours during which period the steam was controlled by hand, often resulting in excessive temperature.

Potentiometer type controllers make it possible to control temperature of tank solutions accurately within 2 or 3 degrees Fahr. This is important because with a temperature of 200 degrees required for proper pickling of strip steel traveling at 250 feet per minute, an increase of 5 degrees, such as encountered with the older control system, dangerously approaches the boiling point of the solution with its accompanying waste of steam and acid and deleterious effects from escaping acid fumes. Thus the closer control is a decided advantage.

Temperatures Constantly Observed

Another factor which has been found important is that the dial indicators of the potentiometer controllers are grouped together on the one panel board as shown in accompanying illustration. This group of indicating dials is mounted in front of the operators at the delivery end of the pickler. Thus indicated temperatures are under constant observation, and if any mishap occurs the operator is immediately aware of it and corrective steps can be taken before any great amount of unclean strip develops.

This is a considerable improvement over the older method where it was necessary to locate the recording and controlling instruments adjacent to the particular tank to which they belong. At these points they were not visible to the men operating the pickler and only were observed by the foreman during the course of a 400-foot trip from one end of pickler building to the other. Thus temperature of a solution might be too low or too high for some time before being observed.

While the lead sheathed iron-constantan thermocouples used in connection with the potentiometer controllers still are subject to cutting by the moving strip in tanks, results of such an occurrence are much less severe than with previous system. A slight puncture of the lead sheathing does not prevent the control from functioning. The wires enclosed in the lead sheath must be severed completely before the valve will cease to operate. When this occurs, it is merely necessary to remove the lead-covered thermocouple from the tank and make the minor repairs required. This is done at the mill with no loss of time or undue expense.

With previous control, although recesses were provided in the brick lining as a protection to the gas-filled lead bulbs, the bulbs occasionally worked out of the recesses and were cut by the edge of the moving strip. In such a case, the gas in the bulb escaped and the control valve opened wide with the result that the solution soon reached the boiling point. When such an accident occurred, the damage could not be repaired at the mill as the cut bulb together with entire control mechanism had to be removed and sent to factory for repair, which required four to five weeks. In the meantime, there was no temperature control on the tank unless a complete spare unit was available.

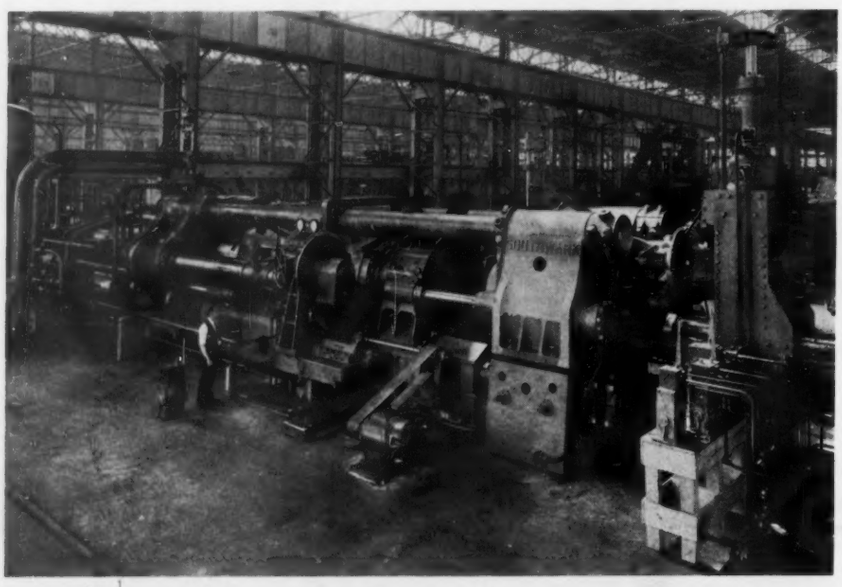
No Air Required

An added economy was experienced after installation of the potentiometer controllers because no air is required for operation of this control system. As pickling tanks are heated up over week-ends and holidays, the former control system necessitated maintaining a supply of compressed air which generally meant that a large air compressor driven by a 400-horsepower motor had to be kept in operation although comparatively little air was needed.

Now it is unnecessary to operate this large motor and compressor, which permits a distinct economy.

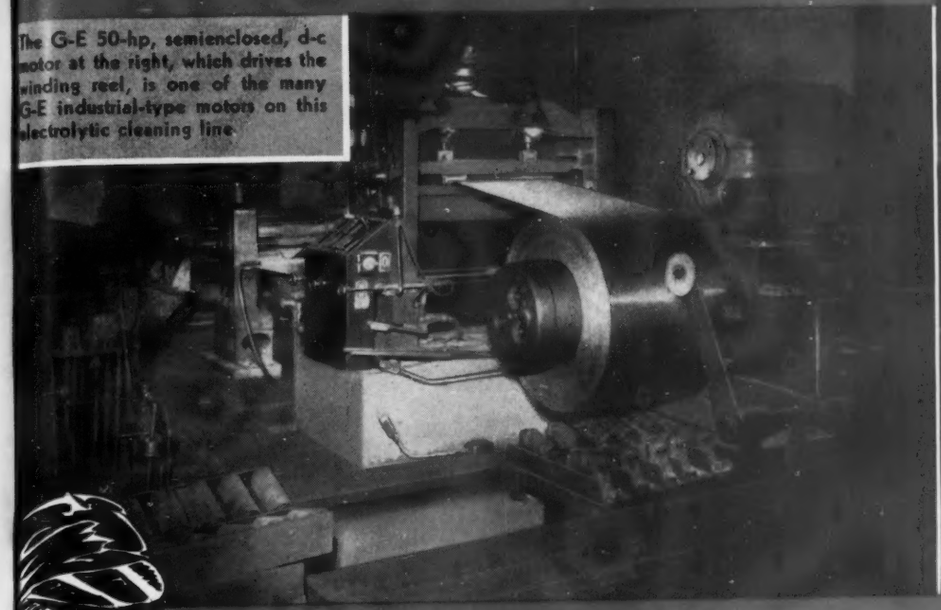
Advisability of maintaining solution temperatures within plus or minus 3 degrees Fahr. has become more and more apparent in recent years. Such close control necessitates thermocouple and potentiometer measurement. Although it was felt that the saving in steam and acid alone should justify the installation of potentiometer control, the results obtained since its installation have shown a number of added economies which have been most gratifying.

Large Extrusion Press Has 7-Foot Work Stroke



■ **Rated at 4500 tons, this four-rod type hydraulic extrusion press built for the Russian government by the Baldwin-Southwark Corp., Philadelphia, has a ram 59 inches in diameter and is capable of handling billets up to 24 inches diameter and 36 inches long. Press is equipped with a 250-ton hydraulic billet shear, two coarse-tooth saws driven by 40-horsepower motors, and a billet-handling device to take the heated billet from furnace and deposit it on a cradle in front of the extrusion container. It is designed for both direct and indirect extrusion. High pressure accumulators, one of which is seen at extreme left, measure 4 feet inside diameter, 30 feet high and have walls 5 inches thick**

TAKE A TIP-



The G-E 50-hp, semienclosed, d-c motor at the right, which drives the winding reel, is one of the many G-E industrial-type motors on this electrolytic cleaning line

The big main-roll drives in a hot-strip mill, such as the G-E motors shown here, are often specially designed for particular operating requirements

from These Men

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JOE is one of the hot-strip-mill operators. He, too, is sold on G-E motors—on the powerful main-roll drives that he has seen roll thousands of tons of steel at speeds as high as 2000 feet a minute. Joe takes his hat off to the G-E engineers who designed these special motors to meet so successfully the exacting requirements of power and speed.

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GENERAL ELECTRIC

Strip Welding

Progress made in butt welding of strip coil ends now permits the resistance welding method to approach closely the speed of stitching. Many features to facilitate operation are incorporated in new machines and detailed here

By S. M. HUMPHREY
Chief Electrical Engineer
Taylor-Winfield Corp.
Warren, Ohio

■ RESISTANCE welding machines used to join strip steel to feed continuous pickling lines or modern continuous cold rolling mills must meet a number of requirements peculiar to this type of application. In the first place, equipment must be much heavier throughout than for ordinary applications of resistance welding. Next, the machine must be able to accommodate thin stock, wide or narrow widths, as well as heavy stock of wide or narrow widths. Adjustments to permit doing this must be easily and quickly accomplished as no delay can be permitted.

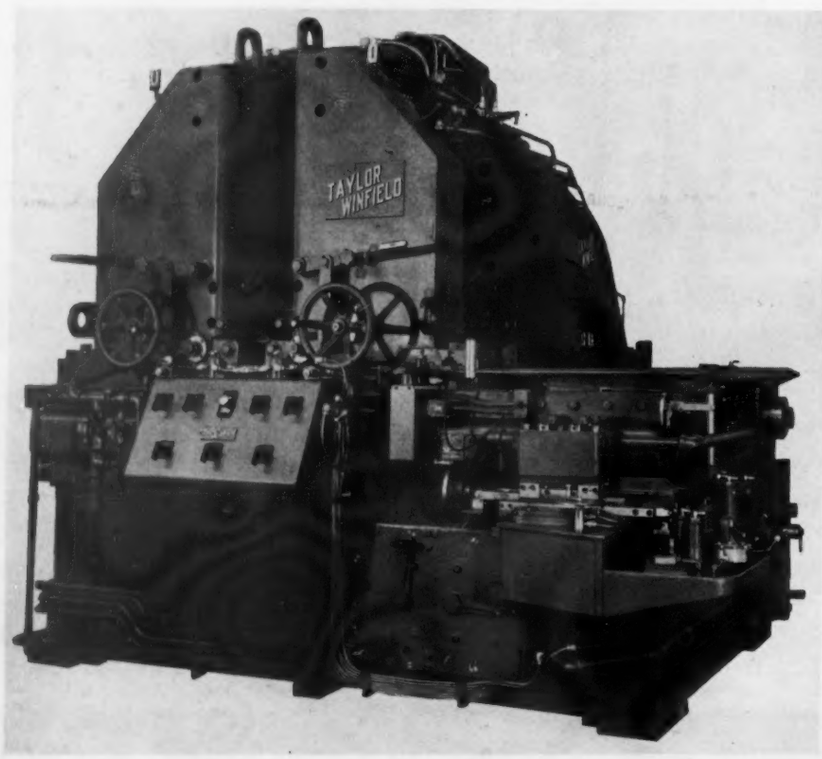
A third requirement is that the dies be readily accessible for changing, cleaning and grinding. Another primary requirements is that welds be of such character as to permit processing of the strip at high speed. With cold mills operating at speeds up to 1500 feet per minute, welds must be sufficiently ductile to withstand the strains of reduction in cold rolling at these speeds.

Another problem is encountered in welding strips varying in thickness. Ends of two coils are seldom the same and may differ as much as 0.015-inch in thickness. Inasmuch as the thinner of the two pieces always is first to come through the welding machine, the newer Morton Trimmers are arranged to clamp onto the thinner stock and taper the trimming tool so that the trim is made on a bevel. The result is that the cold mill is not subjected to a sudden bump but encounters this beveled joint.

Control Improved

The automatic hydraulic valve mechanism in newest units is essentially the same as it has been for the past ten years on Taylor-Winfield equipment, except numerous improvements have been made in the controls and welders themselves to improve their utility for steel mill service.

For instance when changing from one gage of stock to another the following machine adjustments must be made: The final die opening is changed by means of a hand lever with predetermined locating notches. Amount of upset is changed by means of a calibrated rotary lever with pin and locating holes. Amount of material "flashed-off" is changed by a calibrated micrometer screw. The amount of material projecting from the dies is changed by means of a 3-step spacer bar, electrically selected at the control bench board. Hydraulic clamping pressure is changed by the pilot valves on the control bench board. Welding current is adjusted by a rotary knife switch regulator, changing primary transformer taps. Rate of burn-off is set by adjusting a calibrated needle valve con-



Latest type strip welder features grouped and calibrated controls, elevation of clamping fixture for inspection and maintenance of dies

trolling oil flow to the hydraulic valve.

All these adjustments now are located conveniently at the operator's position and can be made without the operators taking more than a few steps. In addition, all adjustments have been calibrated at the factory and a chart provided for convenience in setting. This is an important development. Time required to make all adjustments is not over 1½ to 2 minutes. Even this is not lost time as the setting of controls can be done between welds while the stock is being fed through the machine.

This is a significant improvement over previous designs which required a certain amount of skill and experience and sometimes took 10 to 15 minutets to make the setting. In the past, the man had to learn from an experienced operator, but with the new machines now available the operator does not need a knowledge of flash welding but simply operates the various levers in their correct sequence, which is relatively simple.

Die maintenance has been simplified greatly in new machines. Here the clamping fixtures are hinged at the rear so they may be elevated clear of the dies and top of the machine. Hydraulic or electrical connections are not disturbed. Fixtures can be raised by removal of six cap screws for each. Fixture then is backed up about 1½ inches by the hydraulic operating cylinder and links provided. After this the fixture may be slung up with the crane hook provided and locked in place. With both fixtures slung up in this manner, entire top of machine is clear and dies may be moved readily for remachining, or they may be redressed in place.

Special Alloy Bronze Used

Both upper and lower dies are made from a special alloy bronze selected for a number of qualities including compressive strength, electrical conductivity and other characteristics. Space bar also carries a die cleaner which is essentially a shear blade. As the space bar drops into place, the die cleaner shears off all the excess flash from both top and bottom dies, then rises to the spacing position.

Since these machines weld stock from 12 to 38 inches in width, provision is made to avoid excessive maximum clamping pressure when clamping narrow widths. Three hydraulic cylinders are employed, middle one permanently connected to the clamp. slide, with provision made for disconnecting the other two by hand valves. Also, a regulated hydraulic pressure is available in these cylinders so extremely narrow pieces of stock down to 6 inches in width can be welded without damaging the dies. On such work, only the middle cylinder is used, and pressure is reduced to 400 or 500 pounds.

Another important feature of the clamping mechanism which differs from previous design is that clamping is done at 7 degrees from the vertical on the lower dies instead of in a vertical position. This has a distinct advantage as it achieves two purposes, the major one being that center lines of cylinder, slide and die are located entirely in one plane. Consequently when pressure is imposed upon the work, there is no tendency to tilt the dies. This eliminates difficulties formerly experienced in keeping the clamping pressure divided between the welding dies and heeling clamps. With this device, slide wear and friction are entirely eliminated because directly any pressure is exerted, there is no movement in slide unless there is a deflection in the lower member. Maximum deflection in these machines is 0.005 to 0.006-inch.

To insure that no slippage takes place when upset is made during welding, the clamping pressure on the stock must be about three times the upset pressure. This calls for great clamping pressure, which is obtained easily in this design. With an angular clamping, there is little tendency to slip as the device clamps tighter if any slippage takes place.

Among other improvements on the new machines is the placing of the lower die in a horizontal rather than a vertical plane. This is important as clamping pressure exerted on the die through the work definitely assures good contact between current-carrying terminal and dies proper.

A stock centralizing device or spacer bar is provided to bring the stock to a common center. This device is hand operated on some machines; others have it motorized, depending on type of stock, how much variation occurs and its frequency.

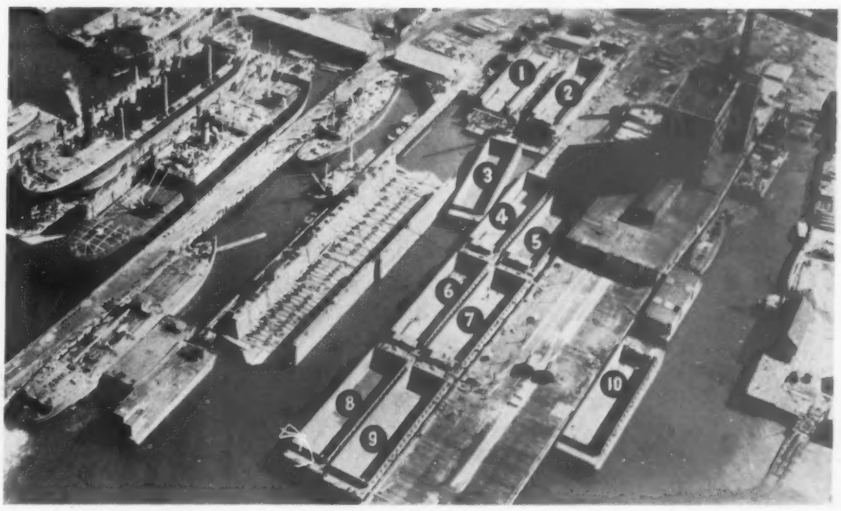
Control Location Important

Placing of controls is quite important. All controls on these machines have been located so operator can see his stock at all times. Particular attention has been paid to this point despite the fact that facilities are available to position the stock without necessity of seeing the operation. Ends of housings are chamfered permitting operator to see stock while being positioned and clamped. Controls for auxiliary equipment as well as the welder are grouped at this one position.

In the actual welding operation, a value in the vicinity of 8 volts has

(*Please turn to Page* 64)

Barges of All Arc-Welded Steel Construction



■ **These ash removal barges 150 feet long, 37 feet wide and 12 feet 9 inches deep from deck to bottom, are of arc-welded steel construction throughout. They are 10 of 30 being built for the City of New York by Brewer Dry Dock Co., Mariners Island, Staten Island, using ten 300-ampere arc welders supplied by Hobart Bros. Co., Troy, O. A 5-foot coaming prevents rubbish being tossed off in rough weather. Saving in towing and rental will be effected as each of the new barges replaces two wooden scows. Eight barges are shown afloat and two, marked 1 and 2, under construction on runways**

ACCESSIBLE CONTROL

Accessible is the word for the controls shown here and accessible is the word for the National Machine Tool Show section of STEEL's September 25 issue.

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Liquid Carburizing Baths

Such baths quickly produce cases ordinarily obtained in cyanide. Also will carburize depths equal to pack carburizing Since liquid carburizing baths produce less distortion of work, less material need be allowed for grinding

By HAIG SOLAKIAN
Vice President
A. F. Holden Co.
New Haven, Conn.

■ UNTIL A few years ago, there were two old and well established heat treating practices for low-carbon steel—cyaniding and pack carburizing. To these, a third practice has been added during recent years known as liquid bath carburizing.

Formerly steels with low carbon were either cyanided for shallow case depths or pack carburized for deeper penetration. Now such steels may be treated in a liquid carburizing bath for any depth of case desired. A properly compounded liquid carburizing bath not only produces cases ordinarily obtained by cyanide, but will carburize to a depth heretofore possible only by pack carburizing.

Disregarding for the moment various additions and energizers, the main source of carbon in these liquid carburizing baths is sodium cyanide. With this as a base salt, other chemicals such as chlorides and carbonates of sodium, potassium, barium and strontium are added in various proportions.

Producers a Deeper Case

Since its application is similar to that of a cyanide bath, why does a liquid carburizing bath produce a deeper case for a given time and temperature? How is it possible to go far beyond the depth range of a cyanide bath? These answers are not perfectly clear, but contributing factors no doubt include the following.

The black cover or blanket on the top of liquid carburizing baths when in operation is more or less solid and acts as a heat insulator, thus reducing radiation losses from top of bath and assisting to maintain a more uniform temperature. Also the blanket keeps air from contacting the bath, thus reducing rate of oxidation and decomposition of the bath and resulting in longer useful life. Practically all liquid carburizers employ such a blanket. In some, it is generated by the bath itself; in others it is added.

Blanket also seals the top of bath and raises internal vapor pressure of the gases, increasing their ability to do useful work. Without the cover, the gases would escape as fast as they were generated without contributing much to useful work.

With a blanket locking in the generated gases, an equilibrium is established between the cyanide and the carbon monoxide gas. The sodium cyanide first oxidizes to sodium cyanate, and this to sodium carbonate and carbon monoxide gas which is generated as it is used up, so no gas is wasted. This means low rate of breakdown and a high degree of efficiency.

Most liquid carburizers have fine solid particles, almost colloidal, suspended throughout the bath. These particles act as baffles impeding and retarding the travel of gases, thus prolonging their period of activ-

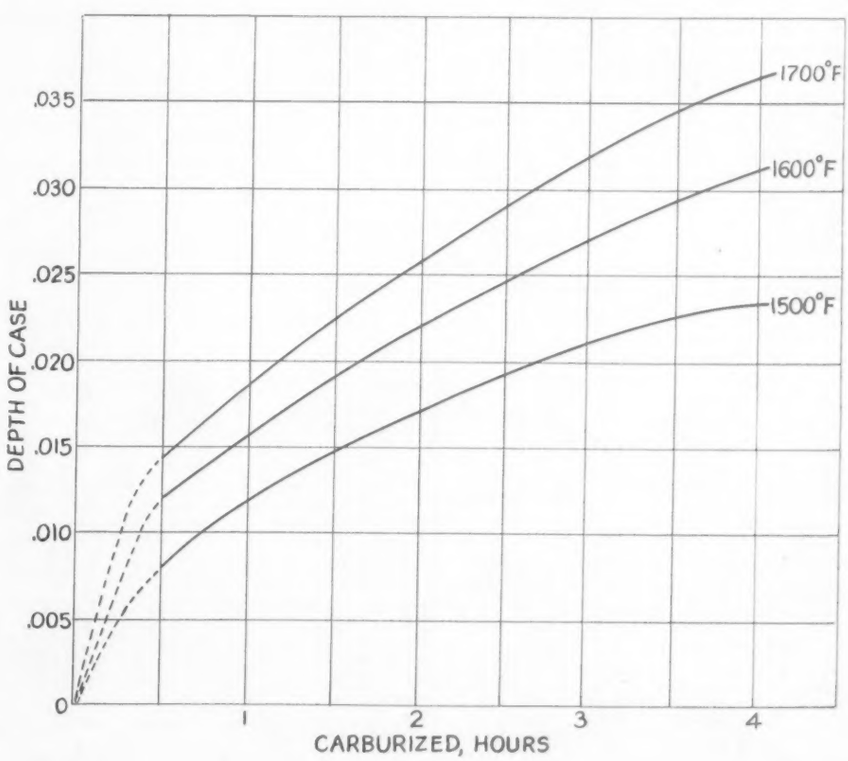


Fig. 1—Curves showing relation of carburizing time and depth of case

ity and contributing to maintenance of equilibrium and efficient utilization of the gases.

In use of liquid carburizing baths, the most important factors are time, temperature, type and depth of case produced. Depth of case or penetration depends upon time and temperature but is not a straight-line function. With a constant temperature maintained, penetration is extremely rapid during first half hour, but as the surface becomes saturated with carbon, the diffusion inward slows down. Curves in Fig. 1 show how the rapid penetration during the first half-hour changes to a reduced rate. For example, at 1550 degrees Fahr. for half an hour, depth of case is 0.010-inch. For two hours, if the same rate were maintained, the depth would be 0.040-inch, but actually it is 0.020-inch. The same is true for penetrations at other temperatures.

Test Bar Gives Case Depth

Depth of case desired, of course, depends upon service requirements of the part. To avoid necessity of breaking parts to measure depth of case, a test bar of the same or similar analysis as the part itself is treated along with the part and subsequently broken to measure depth of case. Depth of case also can be determined from a hardness test.

Relationship between depth of case and hardness is illustrated in Fig. 2. Test pieces ⅜-inch around, S.A.E. 3115 and 4615, were carburized for the times and temperatures indicated, quenched in brine and tested for hardness. While these values may not represent exact figures for various sizes and types of steels, they do give a general idea of what may be expected.

Quite often parts are carburized to a depth of 0.030-inch or more, they are ground for truing purposes. It is important to know the hardness at various depths from the surface. A ½-inch round test piece of SAE 4615 steel, carburized to 0.070-inch, was ground off at 0.005-inch increments to a total depth of 0.030-inch. Hardness at various depths as shown in Fig. 3 does not drop, due, of course, to the original deep case. Tests were not continued deeper than 0.030-inch since it is seldom necessary to grind a carburized part more than 0.025-inch.

Thus, pieces of relatively small dimensions may be carburized to a depth of 0.030 and the surface ground off 0.010-inch without sacrificing much hardness. Other tests indicate there is a gradual tapering of the case beyond the measurable case depth due to some carbon infiltration.

As shown in Fig. 3 for the 0.030 case depth, hardness drops off with each grind of 0.005-inch. This indicates that on parts with a moderate case of 0.025 to 0.030-inch, the grinding should not exceed 0.010-inch if too much of the surface hardness is not to be sacrificed.

Since it often is desirable to temper parts to relieve stresses and increase toughness, it is desirable to know effect of drawing temperatures on hardness of various case depths. This relationship is shown in Fig. 4. Here 1-hour samples carburized at 1500, 1600 and 1700 degrees Fahr. are tempered for ½-hour at temperatures of 300 to 800 degrees Fahr. Hardness values are plotted against tempering temperatures. While hardness does not change much up to 300 degrees, it does go down fast beyond this point. It will be noted all curves go down at about the same rate.

In Fig. 5, the relations are illustrated in a slightly different arrangement. Here hardness as quenched at temperature of 1500 degrees for the various lengths of time is shown by the top curve, with other curves below showing hardness for different tempering temperatures as indicated.

From curves in Fig. 5 it is evident that hardness falls off at uniform rate up to about 600 degrees drawing temperature, but beyond this value the drop in hardness is quite rapid.

Case Studied

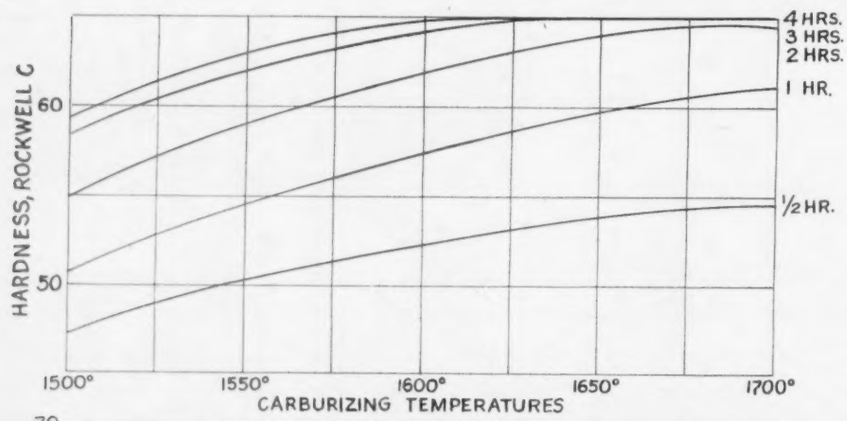
Nature of case produced in a liquid carburizing bath was studied using a test piece of SAE 4615 steel, ½-inch diameter, carburized for 6 hours at 1650 degrees Fahr. with about 0.050-inch case. The first 0.010-inch of this case analyzed 1.182 per cent carbon and 0.259 per cent nitrogen. Second 0.15-inch of the case analyzed 1.14 per cent carbon and 0.053 per cent nitrogen. Two things are noteworthy:

Carbon penetration does not drop off sharply, indicating that it penetrates and diffuses uniformly quite a distance from the surface. At a depth of 0.025-inch it is at least 1.014 per cent or more.

Nitrogen concentration is confined mostly to the surface and beyond 0.010-inch depth it drops off sharply, becoming just a trace. On parts where nitrogen embrittlement is particularly objectionable, whatever nitrogen is present can be removed almost entirely by grinding off 0.005 to 0.010-inch.

As far as operating technique is concerned, there is little difference between a liquid carburizing and a liquid cyanide bath. Both can be heated externally by gas, oil, electric resistance units or internally by electrodes. For one familiar with operation of a cyanide pot, shift to a liquid carburizing bath would be a simple matter.

Although rate of breakdown of liquid carburizing baths is extremely slow, they do not last indefinitely and must be replenished with periodical additions of fresh material at regular intervals. Average replenish-



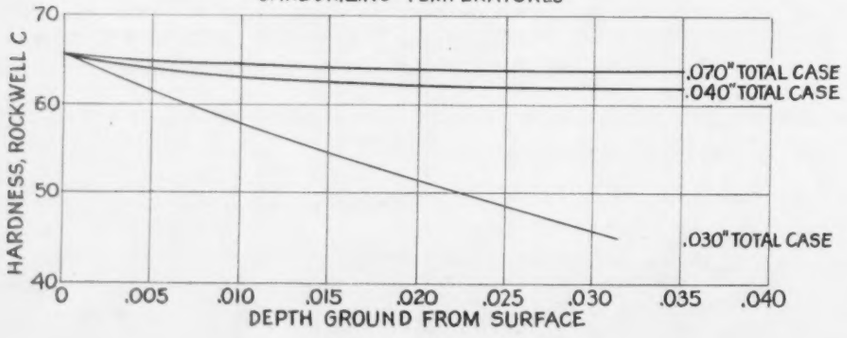


Fig. 2. (Upper)—Relationship between depth of case and hardness is shown here for times and temperatures indicated. Fig. 3. (Lower)—Hardness at various depths is shown by these curves

NEW FAN CAPTURES INDUSTRY

Industry investigates—buys—sends in repeat orders

Sturtevant Arrangement 4 Electric Axiflo Pressure Fan with self-ventilated motor for use in paint spray booth systems or applications involving the handling of lint, pulp fly and dust-laden air, and air temperatures to 250° F.

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Other important advantages of this fan which offer you savings are low installation cost and space economy in meeting a wide variety of fan applications.

Because of its proved advantages, the Sturtevant Axiflo has had literally a sensational reception by industry. Many hundreds of these fans have been installed—and repeat orders continue to come in from every part of the country. A few of the many nationally known concerns who have installed these fans are listed to the right.

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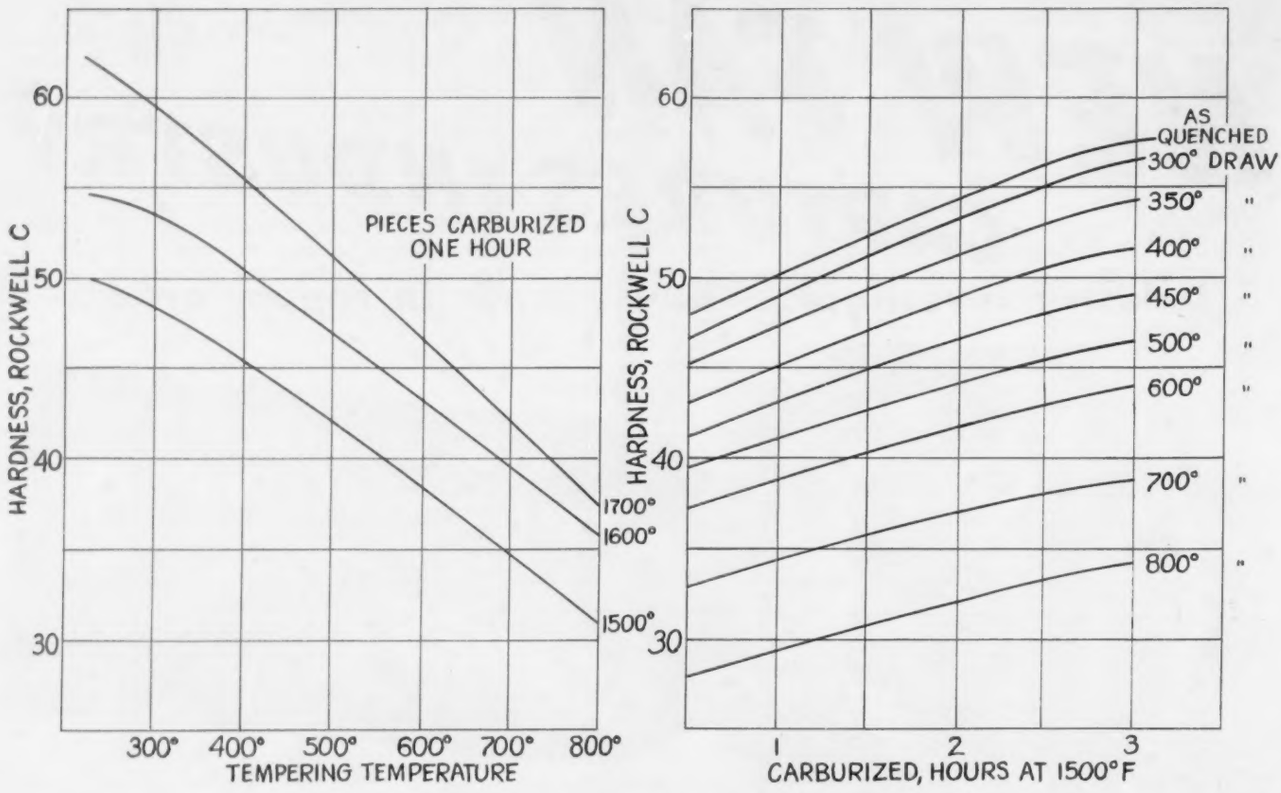

Fig. 4. (Left)—Effect of drawing temperatures on hardness of various case depths is indicated for three carburizing temperatures. Fig. 5. (Right)—Similar effects on hardness by various drawing temperatures are shown here in a slightly different manner

ment required for an 8-hour operating period is 5 to 6 per cent. Ordinarily if work put through consists of small parts, such as screw machine products, normal dragout carries enough salt to permit necessary replenishment. However, if parts are large with little dragout, amounting to perhaps 2 to 3 per cent, it may be necessary to bail out some of the bath so an addition of 5 per cent can be made.

Advantages of liquid carburizing baths can be summarized briefly as follows:

Such a bath is extremely fast compared with similar methods for the same time and temperature. Since there is less distortion, less material may be allowed for final grinding to finish size, thus making the operation more economical.

Liquid carburizing baths are in general more stable, breaking down and decomposing at a slower rate. Thus efficiency of bath does not change or fluctuate rapidly; hence more uniform and consistent results are produced.

Develop Black Cover

These baths, for the most part, develop a black cover which prevents fumes as well as radiation losses from top of bath. Magnitude of such radiation losses is not often appreciated. A pot 12 inches in diameter and operating at 600 degrees Fahr. without a cover has a radiation loss of 24,000 B.t.u. per hour. With a black cover on top of bath, this loss is reduced to 6200 B.t.u. per hour, a saving of 17,800 B.t.u. per hour. Significance of this saving is apparent.

A disadvantage of liquid carburizing baths in general has been that the chlorides gradually convert to carbonates as the sodium cyanide breaks down and changes over to sodium carbonate. Barium and calcium carbonates being insoluble in water, parts covered with such material and quenched in oil have been difficult to wash. This washing difficulty possibly has prevented many changes from cyanide to liquid carburizing baths.

Washes Completely

However, this difficulty has been eliminated by a development during the past year wherein barium and calcium salts are eliminated entirely from the liquid carburizing bath without impairing bath efficiency. This new carburizing bath has no insolubles and washes completely from an oil quench like sodium cyanide.

A point sometimes overlooked in carburizing work is the actual depth of case required. Very often 0.030-inch is specified where 0.015-inch would be sufficient. An excessively deep case does not necessarily render the part any better and not only involves unnecessary cost to put on but also costs more to grind off and finish to size later.

In liquid carburizing work there is a minimum of distortion so very little need be allowed for grinding to take care of this factor. Thus, added case depth to take care of this finishing work to counteract distortion is not required when using liquid carburizing baths. This permits using a light case and obtaining maximum economic benefit from this type of treatment.

The point is that service requirements, and not distortion and its correction, should be determining element in setting the case depth required.

Microporous Hard Rubber Filters

■ Microporous hard rubber filters in pore sizes from 0.1 to 0.3 and 2 to 5 microns have been developed for battery separators, electrochemical processes and industrial filtrations by United States Rubber Co., mechanical division, 1790 Broadway, New York. Normal corrosion resistance of ebonite and permeability of filter fabric are said to be combined in this material which is capable of yielding a filtrate almost completely free from turbidity. Since most industrial filtrations are operated with considerable differences in pressure on both sides of filter diaphragm, reinforced asbestos fabric backings are provided. Smooth surface of diaphragm makes for easy cleaning.

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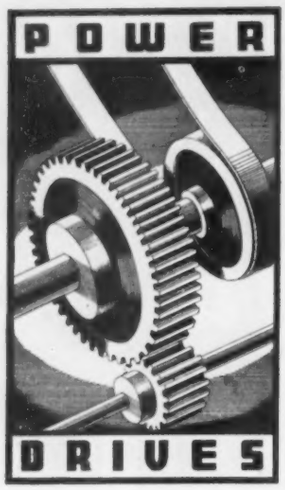


Scrap Baling Plant

Diesel engine drives all power units in baling plant and shows actual power costs which are less than half of estimated purchased power costs. Drive arrangement is extremely flexible. Handling operations minimized by conveyor

■ RECENTLY there has been a distinct trend toward installing diesel engines to drive all units in small plants, especially those plants operated seasonally or only part time. This permits cutting free from power contracts with their all-year service and monthly demand charges whether actual power is consumed or not. Examples include refrigerating plants with heavy summer load and light or no load at all in the winter, cotton ginning (short season), small textile and specialty plants with irregular production.

Many of these plants using diesels have all units connected to the engine through belts and shafting with a small generator to supply electricity for lights and miscellaneous small units. Other plants purchase power for those machines having a fairly uniform load throughout the year, using the diesel only for the intermittent or seasonal loads.

An excellent example of the first type of drive in the metal industry is at the scrap yard of Kingsbury Iron & Metal Co., Chicago. In any scrap baling plant, possibly the most important single cost item is that represented by power bills. So control of power costs for handling and baling loose scrap for shipment is most essential for profitable operation of the scrap yard. When this company moved recently to its Fullerton avenue yard, careful attention was given to the layout and power supply for economical operation of scrap baling. Careful planning the drive for the baling press resulted in actual power costs for baling being about half the original estimate.

The yard specializes in baling industrial sheet-steel scrap such as clippings, punchings and automobile body scrap. Industrial scrap is bought on contract from local plants and hauled by the yard's own trucks. Automobile body scrap is trucked in from local automobile repair shops and wrecking yards, even from neighboring cities. Such scrap cannot be shipped loose economically because of its bulk. By baling this loose bulky scrap into heavy compact bales it is handled and shipped economically and commands a good price as the yard is willing to guarantee it free from terne plate and other undesirable metals. Miscellaneous junk received from local junk wagons is stored and baled separately.

A triple-compression hydraulic baling press produces compressed bales 15 x 18 x 20 inches and weighing from 250 to 900 pounds, depending upon original density of the scrap as piled in the hopper.

Hopper Takes Cut Auto Bodies

Open hopper of press is 44 inches wide, 46 inches deep and 115 inches long. This easily takes large sections of auto bodies which are cut up at the wrecking yard for ease in loading and trucking to the scrap yard. In this way a truck can bring in from 2 to 3 tons of cut bodies, fenders, hoods, etc. at a load. From 6 to 7 tons of this material are baled per hour, and up to 9 tons per hour of black sheet clippings and punchings.

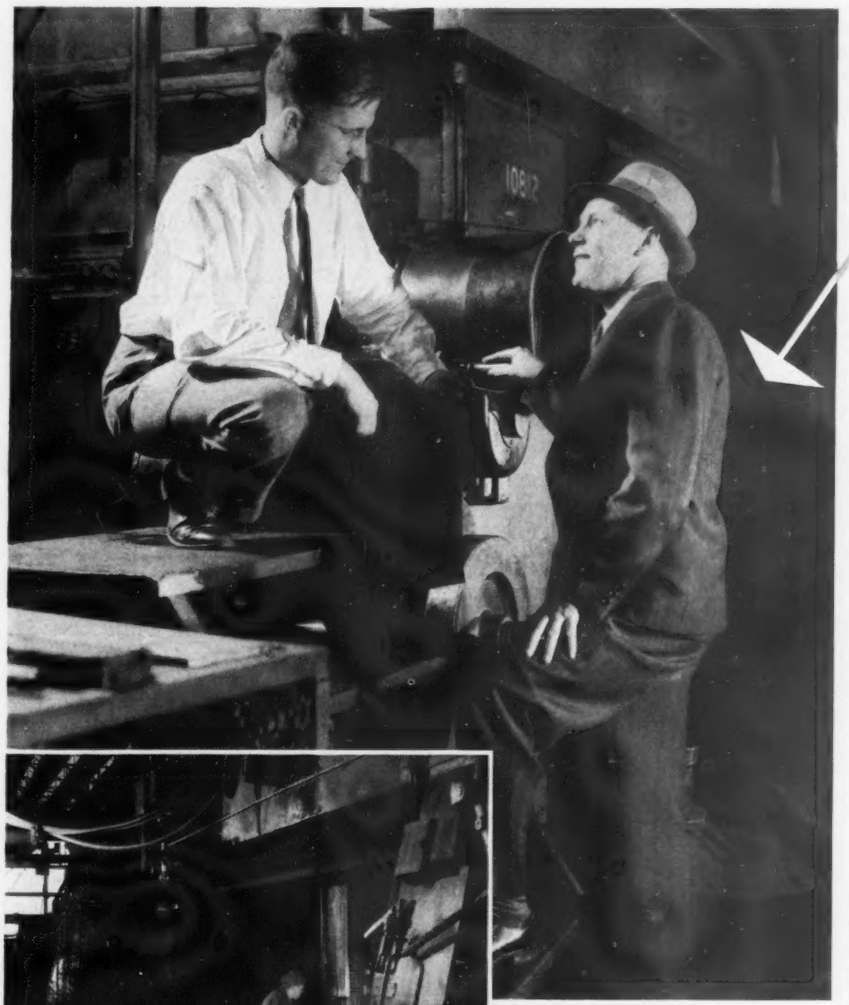
When planning the installation, it was known that cost of power would be one of the heavy expenses.

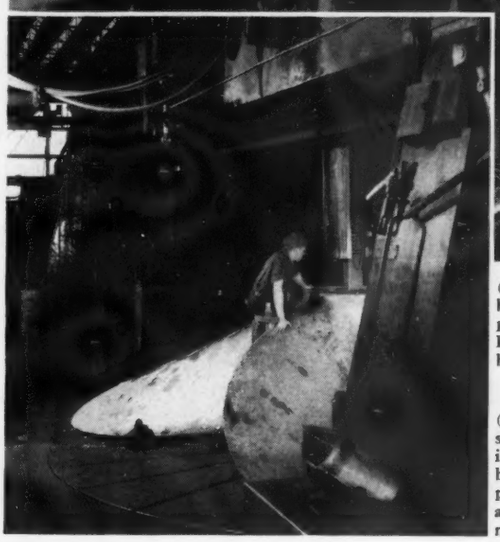
Extended shaft on diesel carries sheave driving generator and compressor (at back) and large pulley which is belted to jackshaft driving high-pressure hydraulic pump. Photo courtesy Venn-Severin Machine Co., Chicago

"GULF HARMONY OIL"

(APPLIED AS THIS GULF ENGINEER RECOMMENDED)

has helped us get smoother operation from this big boring mill"... *says this Plant Engineer*





(Above) Actual photograph of a Gulf lubrication engineer consulting with the plant engineer regarding the use of Gulf Harmony Oil E for the lubrication of this big boring mill.

(Left) This 35-foot boring mill has been specially built to perform the job of milling the hubs of large ship propellers. The big brass propeller shown weighs 45,000 pounds. Accurate work and smooth operation is insured by the use of Gulf Harmony Oil E in the circulating system.

WE have had a definite improvement in the operation of this big boring mill since we adopted the Gulf engineer's recommendations," says this plant engineer. "With Gulf Harmony Oil in service we have eliminated troublesome vibration and are getting smoother operation and better production."

Gulf's higher quality lubricants will make a real contribution to improved production in your plant. Where precision is an important consideration, these better oils and greases often pay for themselves many times by minimizing vibration and resultant inaccuracy in the work. Less time is lost for adjustments, production flows more smoothly, and costly machines last longer when moving parts are protected with the proper lubricants.

Are you taking full advantage of the cooperative service the Gulf engineer in your vicinity is ready to extend to you? His broad experience and knowledge of lubrication can be put to work in your plant at no extra cost whatever. In the long run his recommendations will save you money—in lowered cost for maintenance and power, and in improved operation of all your equipment.

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GULF INDUSTRIAL LUBRICATION

ALSO A COMPLETE LINE OF FUEL AND FURNACE OILS

Electricity for 14 hours' daily operation was estimated to cost $400 per month. Purchased electrical power would have involved a high demand charge because of the short peak loads during compression periods.

In addition, a high investment in motors and electrical installation would have been required. For example, the triple-compression high-pressure hydraulic pump would have required a special 75-horsepower motor and the air compressor a 40-horsepower motor, together with auxiliary control, wiring and transformer equipment.

Investigation indicated that use of a single diesel engine with interconnections to drive all equipment requiring power would prove profitable. Installed, the equipment operates at a power cost of from $100 to $150 per month. In addition, the diesel driven equipment is more compact and occupies much less space than if all were driven by individual motors.

Independent Lighting Circuit

The 2-cylinder 161-horsepower diesel engine built by Venn-Severin Machine Co., Chicago, operates at 362 revolutions per minute. It is connected to drive an electric generator, air compressor, a triple-compression high-pressure hydraulic pump and a cooling water circulating pump for the engine. The generator provides electric power for a 10-horsepower motor driving an alligator shear, lights for the yard and for night operation of the baling press as well as power for operation of pit pump and bale conveyor motor. The crawler-type yard crane and magnet have self-contained gasoline-engine-driven power units. Current for lighting the office is purchased so as to be independent of baling and yard operations.

The engine, hydraulic pump and generator are housed in the same building as the baling press but separated by a partition. The diesel requires no attention after starting except a periodical check of oilers and fuel oil supply. This is handled by the press operator.

Flywheel Sheave Drive

For connecting up these units, the extended engine shaft carries a 48-inch flywheel sheave for 10 V-belts and a 40 x 16-inch pulley on an outboard bearing. The generator and air compressor are driven direct from the flywheel sheave with four V-belts to the generator and six to the air compressor. A small pulley on the end of this shaft drives the water cooling pump for the engine.

The large flat-belt pulley on the extended shaft is connected by a 14-inch belt to a 16-inch diameter pulley on a jackshaft which in turn is geared to the triple-compression hydraulic pump. When only current is desired for yard lighting or for operating the alligator shear, and the baler is not to be operated, a flexible coupling in this jackshaft permits dsiconnecting the hydraulic pump in about a minute. Water pump and generator still operate and the compressor idles through its cutout. Ball bearings are used on all pillow blocks.

A special 14-inch endless leather belt with chrome leather strips fastened on the driving surface transmits power from the main shaft to the jack shaft driving the high-pressure pump, the heaviest part of the entire load. This belt does not slip during heavy overloads at peak compression period and is the only belt which has been able to handle this part of the drive.

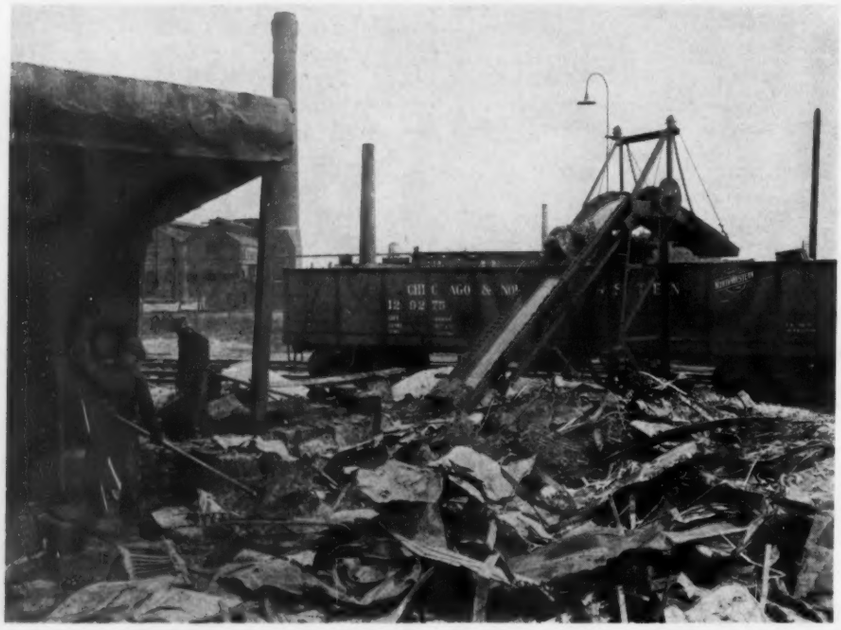
Short Peak Loads

The reason that the oil engine can carry this load, estimated to total about 180 horsepower, is that peak loads on air compressor and pump are staggered and of short duration.

For example, while the bale is being compressed, the loading hopper is refilled and dumped, and the baling hopper cover closed by air pressure. Bale then is compressed from the rear side to 20 inches, from the end to 18 inches, and then up from the pit to 15 inches, using hydraulic pressure. Each of these operations is performed consecutively and is controlled by the press operator. The cover then slides back, bale is elevated from the bottom and is ejected by the cover. Hydraulic pump and air compressor do not produce peak loads together.

Complete bales are squeezed in from 52 seconds for loose material such as auto body scrap, up to 72 seconds with more densely packed black sheet clippings. These bales are discharged on a conveyor which elevates and dumps them directly into the car as below. Until recently, bales had been pushed out of the press on the ground and loaded into the gondola by the magnet on the yard crane. Addition of this conveyor eliminates this extra handling and releases the yard crane for supplying material to the baler, unloading trucks and other work.

Bales ejected from the press are loaded directly into cars by conveyor thus releasing yard crane and magnet for other work. Photo courtesy Link-Belt Co., Chicago



Selling as a Game Follows Sports Rules

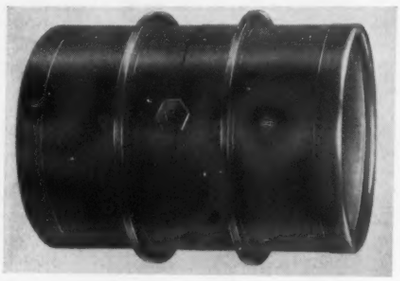
■ *Selling Is a Game*, by Jack McCord; cloth, 155 pages, 6 x 9 inches; published by Prentice-Hall, New York; supplied by STEEL, Cleveland, for $2; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London S.W. 1.

Based on many years of close association with noted athletes and coaches, the book is designed to show the application to selling of the winning technique employed by outstanding competitors in various fields of sport.

The author does not deal with psychology, complexes, inhibitions or vague theories but applies the experience of years of selling and contact with athletics, on the basis of the same rules being successful in both. As a game, selling will bring success to those who follow the rules.

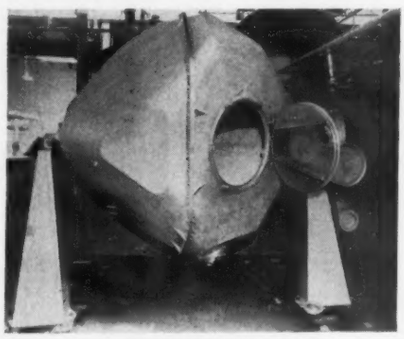
NEW METAL PRODUCTS

■ A 2-piece, 55-gallon drum for sulphuric acid service is announced by Pressed Steel Tank Co., 1445 South Sixty-Sixth street, Milwaukee. Drum is constructed from two seamless shells of flange quality steel, welded together by a single circumferential weld at mid-section. Circumferential weld and side bung weld render interior of drum smooth and free



of crevices. I-bar rolling hoops, required under ICC 5A specifications, are attached by separate lugs welded to wall of drum. Chimes at top and bottom are reinforced separately to protect heads and so formed as to insure smooth interior.

■ A churn claimed to be largest in the country has just been built by Jensen Creamery Machinery Co., Oakland, Calif., and installed in the Challenge Cream and Butter Association plant at Oakland, Calif. It is constructed from two sand-cast aluminum shells which together



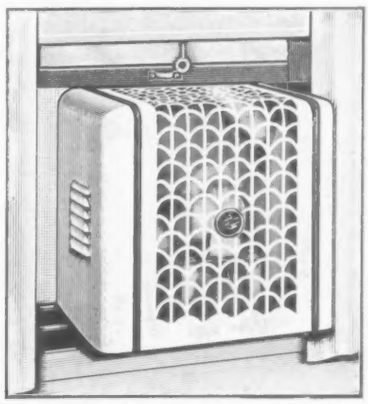
weigh 1500 pounds. Because of its cubical design, the churn is reported to be capable of churning butter in 50 per cent less time than conventional roll type units. Aluminum was used because of its lightness and non-contaminating properties.

■ Washers so small as to be counted among world's tiniest fabricated products have been manufactured by Wrought Washer Mfg. Co., Milwaukee. Stamped from phosphor bronze to exceedingly close tolerances, washers measure .069 x .041 x .005 inches. Combined area of over 700 of these minute washers would cover top of a silver dollar; a quarter of a million would weigh less than a pound. Special facilities for producing washers and stampings of very small size but requiring great precision have been installed by this company.

■ A hermetically sealed low pressure water chiller known as "Trane Turbovac" has been developed by Trane Co., LaCrosse, Wis. Unit consists of a heavy steel casing containing a centrifugal compressor using a volatile freon refrigerant, a water chilling unit and condenser. The refrigerant has a 120-degree boiling point at atmospheric pressure which

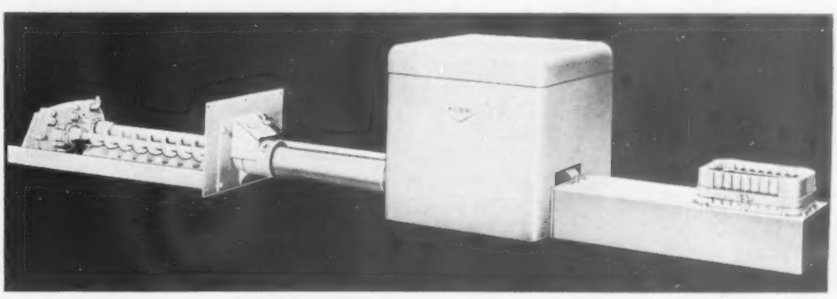
means that entire unit is operated under a vacuum. Turbovac is now available in one size with capacity range from 65 to 80 tons. Units of 100, 150 and 200-ton capacities will be added to this line. Unit is approximately 11½ feet long, 8 feet high and 4 feet wide, weighing approximately 12,000 pounds. Motors can be oiled from the outside when unit is in operation. Impellers are fabricated entirely of nonferrous metal to prevent corrosion and subsequent unbalance. There are two coils of fins and tube type, one used to chill water, the other to condense refrigerant. Coils are constructed entirely of red brass and operate at pressures up to 250 pounds per square inch. Shells are heavy steel plates electricaly welded. All steel parts are heat treated after welding to prevent warping. All joints are sealed with neoprene gaskets.

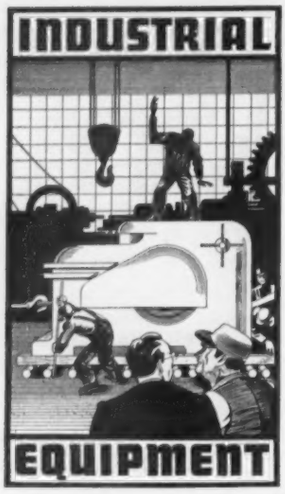
■ A development in cooling equipment for small homes, apartments, stores and offices is announced by Emerson Electric Mfg. Co., St. Louis. Cooling unit is streamlined, ornamental, is mounted on window



sill under sash and will not interfere with opening and closing window. An adjustable floor stand may be used where narrow window sills do not give sufficient support. Capacity is 4000 cubic feet of air per minute. 18-inch fan has overlapping aluminum blades. Unit requires oiling once a season. Cabinet is finished in wrinkled ivory with chromium trimmings and blades are finished in ivory. Fan retails at $49.95.

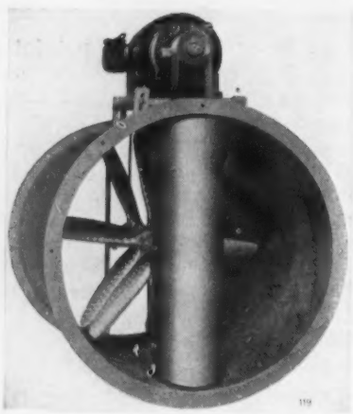
■ Domestic size straight-line type bin-feed stoker which is flexible and tailored to meet various basement conditions has been built by Will-Burt Co., Orrville, O. Design permits lengthening stoker to any practical dimension and locating power unit anywhere between coal bin and heating plant. No special bin construction is necessary. Oiling is not required more than once a year. Coal screw is made in sections and power used is low.





Propeller-Fan Blower

■ Propeller-type fan blower with motor located on top of blower housing, entirely out of the air stream, has been developed by Hartzell Propeller Fan Co., Piqua, O. Blower, it is claimed, can be used in air at high temperatures, or in presence of acids or other elements which otherwise might damage motor. One side of platform on which motor rests is hinged; lock bolts on opposite side adjust drive belt tension. V-belt transmits power from motor to fan shaft. Steel guard protects drive-belt inside motor. Blower is made in twelve standard sizes, with propellers from 18 to 48 inches in length.

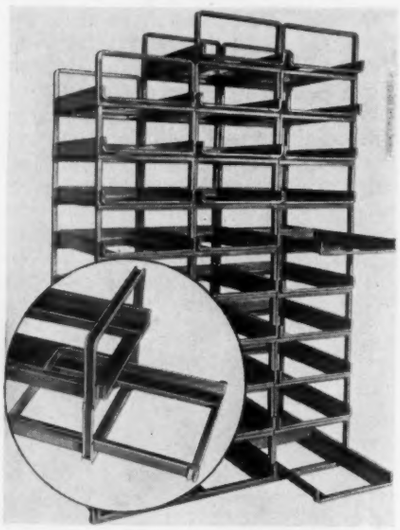


Press Filter Paper

■ Hanson-Van Winkle-Munning Co., Matawan, N. J., has recently placed on the market a filter press paper 0.003-inch thick to be placed over filter cloths to save frequent replacing of filter cloth. Acting as support for paper, filter cloth seldom has to be removed from press for cleaning as paper does over 99 per cent of the work. Paper with accumulation of sludge is removed and replaced by new sheet when press is cleaned. Breaking strength of paper is nearly as high when wet as dry. Good contact between paper and filter is maintained and solution does not leak from press. Sheets 12½ x 12½ inches are available in reams of 500 sheets for less than 1 cent apiece.

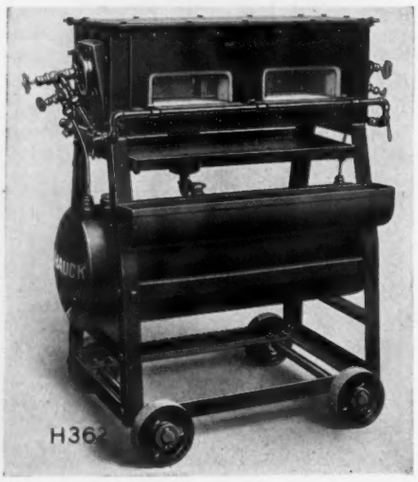
Roller Bearing Rack

■ A roller bearing slide has been added to the Stackrack made by Stackbin Corp., 68 Troy street, Providence, R. I. Boxes placed on these slides ride on bearings; sliding motion is restricted to half their length. Upper surfaces of channel slides are smoothed to permit easy insertion and removal of boxes. Racks may be built up to any height and capacity.



Rivet Heating Forge

■ Hauck Mfg. Co., Brooklyn, N. Y., offers double chamber two-burner rivet heating forges unmounted (No. 375) or mounted on wheels (No. 362). The two openings are each 9 x 3½ inches and the two heating chambers 13 x 9 x 6 inches. Burner consumes 2 gallons of oil per hour and 10 cubic feet of air per minute at 60 pounds per square inch pressure. Oil tank holds 25 gallons. Normal heating capacity is 800 ¾ x 3-inch rivets per hour. Unit is 700 pounds net weight. Wheels have 7-inch diameter and 2-inch face.

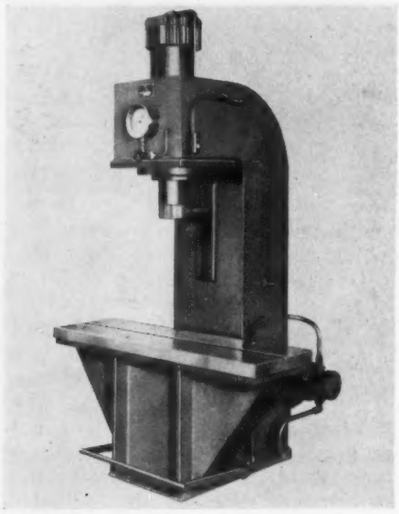


High-Bay Reflector

■ Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., offers aluminum reflector for use with incandescent lamps for general lighting of high bay areas in foundries, machine shops, etc., where it is necessary to mount units at great heights. Units concentrate light distribution on working surfaces and do not waste illumination on upper side walls. 'Locklite" principle of attaching industrial reflectors speeds installation.

Hydraulic Press

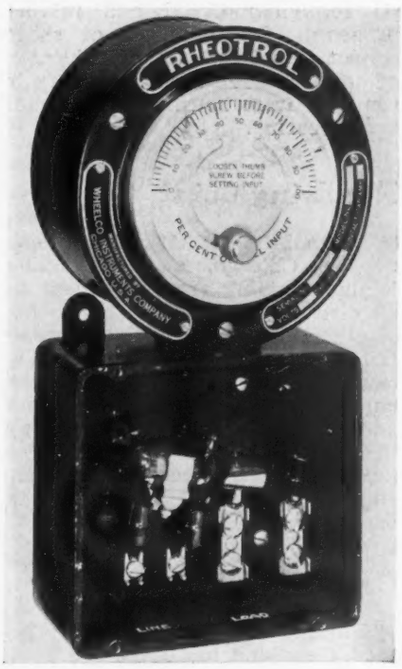
■ Denison Engineering Co., Columbus, O., offers 25-ton press for straightening work. Power unit is mounted as integral part of fabricated steel frame, consists of a 15-horsepower motor with hydraulic pumps of proper sizes to effect a down speed of ram of about 24 inches per minute and is capable of



effecting a 25-ton load at any point of complete length of stroke. Total stroke of press is 18 inches. Reversing 4-way operating valve is connected by linkage to special pressure control valve operated by lever at front of press. Motor control push button is on side of press frame. Infinite tonnage variations up to capacity of press may be had by use of bar-type foot-operated pedal. To reverse, pedal is released and ram rises at about 48 per minute. Length of reversal stroke may be decreased by adjustable stop, which also acts as unloading valve control. At top of reverse stroke pumps are unloaded to oil reservoir under no pressure. By thus dropping working pressure, saving in electrical energy is accomplished.

Input Controller

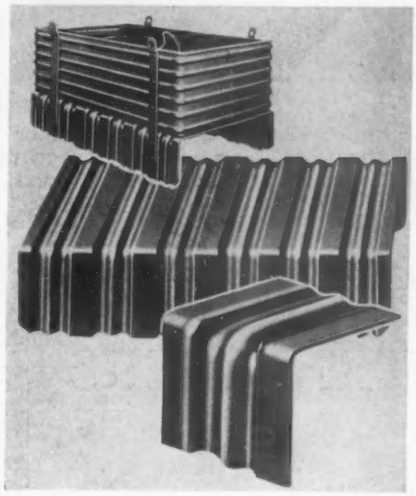
■ Wheelco Instruments Co., 1929 South Halsted street, Chicago, offers Rheotrol, a stepless and highly efficient manual control for electrically operated furnaces, ovens, heaters,



kilns, etc. Input controller has rotating cams operating switches to effect make and break control. Adjustment is by variable ratio settings of rotating cams. Unit balances heating rate with varying heat requirements. Control of heating rate is effected once every minute.

Lift-Truck Platform

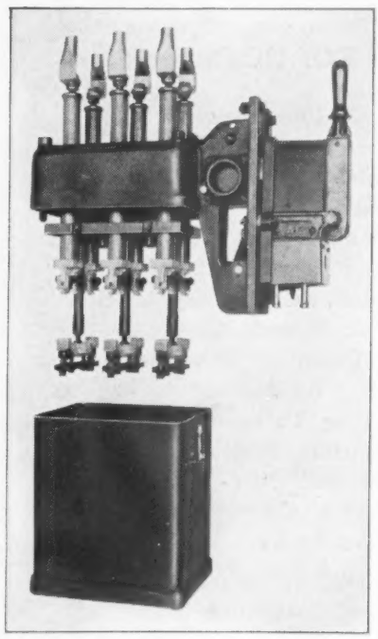
■ All-steel lift truck platform with double corrugations has been designed by Union Metal Mfg. Co., Canton, O. Unit consists of two half round recesses joined by raised center rib. Both recesses and raised rib traverse entire deck of platform, rolling over knee in gradual curve and down legs. It is claimed that this construction gives exceptional strength at knee where usual point of failure occurs, that in flowing over bend center rib acts as knee



brace or gusset, that in traversing deck it acts as integral bar brace and that in legs it acts as bar brace stiffener.

Oil Circuit Breaker

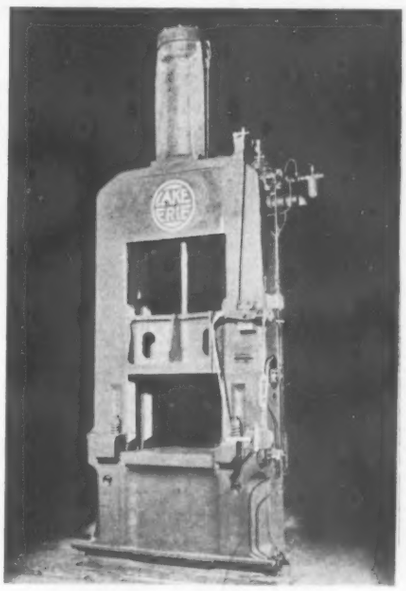
■ Boston works of Allis-Chalmers Mfg. Co., Milwaukee, Wis., announces KD-20 50,000-kilovolt-ampere interrupting rating switchboard



oil circuit-breaker. Unit has three poles arranged one behind the other as viewed from front or operating end. Resultant arrangement of bushings eliminates necessity of crossing leads in certain applications of open and enclosed type switchboards and makes unit adaptable for replacing obsolete breakers of same arrangement. Arcing contacts are butt type. Main current carrying contacts, silver-plated, are of wedge and finger type for 600 amperes and wedge and laminated brush type for 1200 and 2000 amperes. Unit has Bakelain bushings, enclosed low inertia high speed mechanisms and vents to permit escape of gases incident to interruption.

Drop Stamps

■ Lake Erie Engineering Corp., Buffalo, N. Y., offers self-contained drop stamps ready to connect to compressed air lines. Units operate at high speed for long and short run stamping, forming and embossing of standard and difficult-to-form



low ductile alloys, and thin quick-cooling hot work. Hand lever gives sensitive control of speed and power. Cam setting is adjustable for positive or oscillating motion. Safety is provided by holding ram in two upper positions by gravity drop safety dogs. Ram cannot be operated until safety dogs are pulled clear by air cylinders released by foot treadle. Over-travel from any cause is prevented by air cushion on top of cylinder. Control valve is of balanced type. Throttle valve is rotating type. All valves are lapped into position. For air lubrication there is included a hand-operated primer oiler for use before starting and an automatic inspirator lubricator for continuous operation.

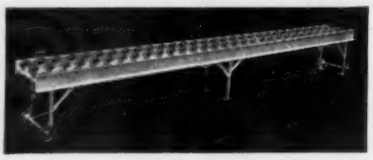
Drill Stands

■ Van Dorn Electric Tool Co., Towson, Md., has redesigned two of its drill stands. The smaller accommodates entire range of end-handle

tools from Holgun up to the ⅜-inch Utility, Scrugun, Nos. 12 and 22 screw drivers and No. 22 tapper. Larger stand will accommodate new ¼-inch utility drill, new ⅜-inch heavy duty drill and ½-inch junior and previous model ¼-inch standard drills.

Portable Conveyor

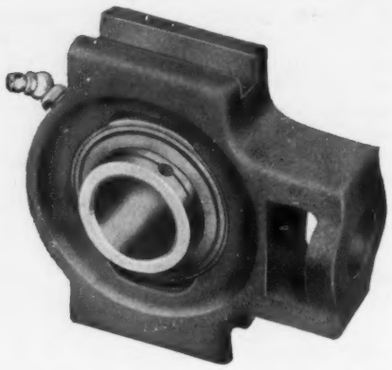
■ Aluminum Ladder Co., Tarentum, Pa., has placed on the market a roller-type portable aluminum conveyor with steel ball-bearing wheels fitted on an eccentric axle at each end of the conveyor. When wheels are in "down" position, conveyor can be rolled from place to place. When they are lifted up, conveyor rests on floor. Unit can be supplied



with or without legs and with or without wheels on legs. Model shown is 10 feet long by 14 inches wide and weighs 60 pounds.

Flange, Take-Up Units

■ Stephens-Adamson Mfg. Co., Aurora, Ill., announces self-contained flange and take-up bearing units which are self-aligning with seals built in as an integral part of the bearing proper independent of housing. In take-up unit illustrated, Sealmaster centrifugal labyrinth seal effectively seals bearing against



all foreign material and retains lubricant. Misalignment of shaft cannot interfere with effectiveness of seal for even though bearing is removed from housing, dirt cannot enter bearing.

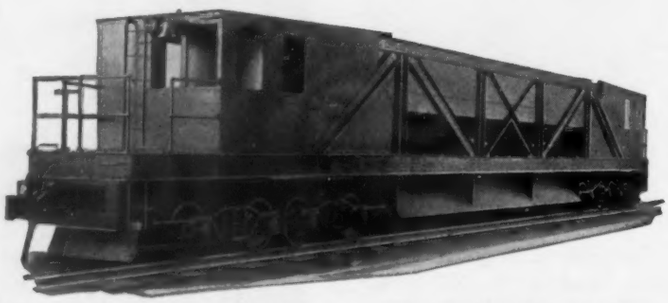
Revolving Joint

■ Barco Mfg. Co., 1801 Winnemac avenue, Chicago, offers revolving joints providing free movement in all directions to supply steam, gas or other fluids from a fixed or stationary supply pipe to a rotating drum or member. Only revolving part is sleeve, which also slides out and in to take care of any end play in drum. Double ball design provides flexibility to compensate for any slight misalignment or eccentricity of movement.

Carbon Steel Electrode

■ Lincoln Electric Co., 12818 Coit road, Cleveland, has developed Hardweld 50, a medium carbon steel electrode for building up steel parts and surfaces before applying harder facing alloys. Deposit has considerable resistance to deformation and wear and is machineable at slow speed. Dipped coating stabilizes arc and permits deposition of a tough, dense medium carbon steel. When deposited on straight carbon steel and allowed to cool naturally, hardness of deposit is generally about 20-35 Rockwell C. In application, electrode is positive and work negative. Rod 3/16-inch in diameter is for current range of 150 to 225 and 20 to 25 arc volts. Rod ¼-inch in diameter is for current range of 200 to 350 and 20 to 25 arc volts.

ATLAS ORE TRANSFERS



100 ton—3 compartment Ore Transfer. Roller Bearing Journals. Double end control for car operation. Individually operated discharge gates.

OTHER ATLAS PRODUCTS

Gas-Electric and Diesel-Electric Locomotives . . . Electric Transfer Cars for Blast Furnaces and Steel Plants . . . Stockhouse Scale Cars for Blast Furnaces . . . Concentrate and Calcine Cars for Copper Refineries . . . Automatic and Remote Controlled Electric Cars . . . Pushers, Levellers and Door Extractors . . . Coal Charging Lorries, Coke Guides and Clay Carriers . . . Atlas Patented Coke Quenching Cars for By-Product Coke Ovens . . . Atlas Patented Indicating and Recording Scales . . . Special Cars and Electrically Operated Cars for every conceivable Purpose.

THE ATLAS CAR & MFG. CO.

Engineers . . . Manufacturers

CLEVELAND, OHIO

Built-In Handling

(*Concluded from Page 44*)

mechanism, which, if the subplaten under or over-travels, prevents operation of the upper press platen. Should this condition occur, jog buttons are provided to allow the subplaten to be located properly and the press to continue through the cycle.

After the subplaten is in position, the head of the press comes down, forming the part. When the press has returned to position on the up stroke, the conveyor starts and the subplaten runs out of the press on a roller conveyor table on a truck which has previously been positioned for its reception. At the same time another subplaten is being fed into the press from the opposite side. This cycle can be fully automatic, semi-automatic or entirely manual in operation.

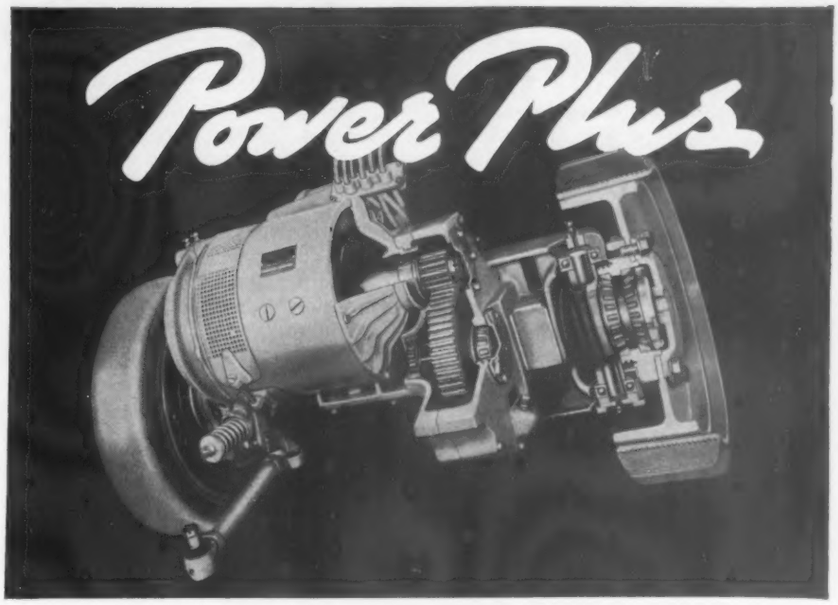
Almost Constant Operation

Of course, a number of trucks and subplatens are used so the press may be maintained in almost constant operation. Several parts are pressed out in one down stroke of the operating head. It will be noted also that only a male die is used for forming the aluminum shapes. The action of the powerful hydraulic press squeezes the rubber slab over the aluminum blank placed on the lower die, thus completely forming and flanging such parts. This method of using rubber for forming makes it possible to use dies of die-cast zinc, lead, wooden or wood-fibre, as well as steel.

Use of Spectographic Analysis in England

■ *Spectrographic Analysis in Great Britain*, edited by A. C. Candler; limp cloth, 80 pages, 6 x 9½ inches; published by Adam Hilger Ltd., London, Eng.; supplied by STEEL, Cleveland; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S. W. 1.

This small volume contains 28 brief articles by various authors which show the wide application of spectrographic analysis to industry. The book is divided into four sections, the first devoted to use of the spectrograph in metallurgy and touches upon such materials as alloy steels, lead and copper, zinc and cadmium, aluminum and light alloys, and precious metals. The second section relates to glasses, paints and fabrics and the third touches upon soil and plants. The fourth section describes the application of the spectrograph to art, archaeology and crime.



. . . ANOTHER YALE EFFICIENCY STORY

Power Plus—power with maximum operating efficiency resulting in lowest ton miles cost. Something that the Power Axle illustrated above definitely gives.

The heart of every Yale Electric Truck—this sturdy Power Axle is ready to go 24 hours a day. That's why, year in and year out, Yale trucks prove themselves faster—more powerful—more easily maneuverable in every classification of industry.

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PHILADELPHIA DIVISION, PHILADELPHIA, PA., U. S. A.
IN CANADA: ST. CATHARINES, ONT.

Strip Welding

(*Concluded from Page 49*)

been found to give a stable arc during the flashing period. Transformer taps permit regulation from 6 to 10½ volts. However, the larger part of the work is done at 8 or 9 volts. It has been found quite possible to get too low a voltage. These machines cover quite a wide cross section and if in going from heavy stock to light material an attempt is made to reduce the current by reducing the voltage, a level may be reached where the arc is unstable. To avoid this difficulty, sufficient reactance is maintained in the circuit so the voltage is not reduced too far in getting the current down.

One electrical factor which appears to remain substantially constant in making a good weld for this work is the current density. About 3000 amperes per square inch gives excellent results. Of course, other factors must be correct.

Flashing speeds, for instance, are extremely important. For any given transformer setting, the electrical demand varies with the speed and is directly proportional to the arc current. Thus if flashing speed is increased, the current automatically goes up. From previous experience, a voltage is established which gives the proper stable arc, and flashing speed is adjusted to give about 3000 amperes per square inch.

This results in the soft weld so highly desired. In welding 16-gage by 38-inch stock on the new machines, the demand during flashing period will be around 80 to 90 kilovolt-amperes. On heavier stock such as 24 x ¼-inch, the demand will be in the neighborhood of 150 to 200 kilovolt-amperes during flashing. When stock is pushed together during upset and the arc is extinguished for a few cycles, the demand may rise to 600 or 700 kilovolt amperes.

33 years
1906-1939
DAMASCUS
Manganese and Alloy Steel
CASTINGS
FROM ½ TO 1000 POUNDS

Produced in our modernly equipped foundry from electric furnace steel and heat-treated in automatically controlled gas-fired furnaces.

We are in position to manufacture specialties made of manganese and alloy steel castings and invite concerns to write us about their requirements.

DAMASCUS STEEL CASTING CO.
New Brighton, Pa.
(Pittsburgh District)

Hot Plate Varnish Test

■ To test polymerization or solidification points of varnishes and their bases previous to the "cooking" process, a hot plate was built by Thermo-Electric Co., 1012 West Superior avenue, Cleveland, in which maximum temperature variation permissible from hand setting on adjusting switch is plus or minus 1 degree Fahr. In testing varnish, a drop of the material is placed on surface of plate and rubbed until solidified, time being carefully noted on a stop-watch. Since after-treatment of varnish is based largely on time-temperature test result, extremely close control is necessary.

Getting Best Results From Letter Writing

■ *Money in the Mail*, by Jack Garrett; cloth, 304 pages, 5 x 8 inches; published by Business Book House, Charlottesville, Va.; supplied by STEEL, Cleveland, for $3; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London S.W. 1.

This is a manual of letter writing to produce results, and is based on the author's experience in correspondence. He stresses the value of making letters pull business by creating interest on the part of the recipients, by presenting the case of the writer in its best phase and putting the case in a way to persuade.

The chapters take up the matter of correspondence in detail, analyzing the best forms of approach and argument to bring results. It explains how confidence may be obtained and how offense may be avoided. It indicates methods for collection letters that will bring cash response and retain the good will of the debtor. The form letter is also treated from the viewpoint of obtaining results.

Favorable Outlook In Markets Holds

Demand More Irregular But Steelmaking At New 1939 High

MARKET IN TABLOID ★

Demand
Well sustained despite minor fluctuations.

Prices
Steadier; no indications of general rise next quarter.

Production
Up 1½ points to 63½ per cent.

■ THE immediate steel outlook continues favorable, with ingot production advancing 1½ points to 63½ per cent, highest since fall of 1937.

Demand is improving less rapidly and in some districts has tended to falter lately, but current and prospective business seemingly assures sustained activity into fourth quarter.

Recovery in steelmaking the past 90 days has been so sharp as to suggest a leveling off in the near future, or at least a slower rate of improvement.

Automotive operations, last week at the year's ebb as regards final assemblies, will be accelerated next month. Meanwhile, steel releases, although still relatively small, are increasing steadily as additional interests start new model production.

Business from railroads still is disappointing, recent gains having been slight. Demand is more likely to increase than recede the next few months, in view of contemplated programs for equipment buying and repairs. Extent of the upturn is problematical.

Structural shape and reinforcing bar production and fabrication continue active but are in excess of inquiries. This points to reduced business in these products later in the year, although at present, good activity in shipbuilding and in oil and gas pipe lines helps to offset the lag in new building and engineering projects.

Steel Orders Bolstered By Pipe Lines and Shipbuilding

The federal maritime commission has awarded five more cargo ships, in addition to nine placed a week ago, and may order another five. Shipbuilding continues the best outlet for plates in eastern markets. Pittsburgh and Ohio mills find line pipe business the best in at least two years, with additional bookings in prospect.

Automobile assemblies last week of only 12,955 units were the fewest so far this year and compare with 23,940 a year ago. With Ford curtailing for model changes, total output of the Big Three was only 5690 cars and trucks. Independent companies, leading in new model assemblies, accounted for 7305 units, against 4705 the week before.

Finished steel prices have steadied materially since the May price war, but there is no indication that general advances will be attempted next quarter. Books for the fourth period normally would be opened early in September. Revised quantity extras on hot-rolled alloy bars are expected to be announced shortly. Similar changes proposed on cold-drawn carbon bars may be deferred until next month.

Steady Shipments Reduce Sheet and Strip Backlogs

Sheet and strip producers are making good progress in attempts to complete shipment by Sept. 30 of tonnage booked this spring at cut prices. However, this does not apply to automotive steel. Consumption elsewhere has been better than was expected three months ago and buyers' inventories are not being swelled excessively. Nevertheless, possibility is seen of a brief lag in miscellaneous demand for flat-rolled products in October if contracts are closed out as planned.

Tin plate production is off slightly to 65 per cent. The seasonal letdown in specifications and output has been slower than usual, partly because general line can needs have been heavier than expected, although a downward trend is indicated for coming weeks.

Scrap prices still are headed upward, both in domestic and export markets, but are climbing less rapidly. The composite price advanced 9 cents last week to $15.42, highest in 22 months. The finished steel composite is unchanged at $55.60.

Eight districts contributed to last week's steelmaking rise, maintaining the margin over the rate a year ago at 22 points. Gains included 4 points to 56 per cent at Pittsburgh, 2 points to 58 at Chicago, 7 points to 86 at Wheeling, 5 points to 75 at Birmingham, 3 points to 60 at Cincinnati, 3½ points to 83½ at Cleveland, 18 points to 82 at Detroit and 2½ points to 57 at St. Louis. Buffalo declined 2½ points to 58, with eastern Pennsylvania at 43, New England at 70 and Youngstown at 55 unchanged.

COMPOSITE MARKET AVERAGES

	Aug. 19	Aug. 12	Aug. 5	One Month Ago July, 1939	Three Months Ago May, 1939	One Year Ago Aug., 1938	Five Years Ago Aug., 1934
Iron and Steel	$35.97	$35.93	$35.90	$35.82	$35.80	$36.50	$32.24
Finished Steel	55.60	55.60	55.60	55.62	56.00	57.20	54.00
Steelworks Scrap..	15.42	15.33	14.96	14.72	14.05	14.44	9.98

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Aug. 19, 1939	July, 1939	May, 1939	Aug., 1938
Steel bars, Pittsburgh	2.15c	2.15c	2.20c	2.25c
Steel bars, Chicago	2.15	2.15	2.20	2.25
Steel bars, Philadelphia	2.47	2.47	2.52	2.57
Iron bars, Terre Haute, Ind.	2.05	2.05	2.10	2.15
Shapes, Pittsburgh	2.10	2.10	2.10	2.10
Shapes Philadelphia	2.215	2.22½	2.21½	2.21½
Shapes, Chicago	2.10	2.10	2.10	2.10
Plates, Pittsburgh	2.10	2.10	2.10	2.10
Plates, Philadelphia	2.15	2.15	2.15	2.15
Plates, Chicago	2.10	2.10	2.10	2.10
Sheets, hot-rolled, Pittsburgh	2.00	2.00	2.05	2.15
Sheets, cold-rolled, Pittsburgh	3.05	3.05	3.10	3.20
Sheets, No. 24 galv., Pittsburgh	3.50	3.50	3.50	3.50
Sheets, hot-rolled, Gary	2.00	2.00	2.03	2.15
Sheets, cold-rolled, Gary	3.05	3.05	3.08	3.20
Sheets, No. 24 galv., Gary	3.50	3.50	3.50	3.50
Bright bess., basic wire, Pitts.	2.60	2.60	2.60	2.60
Tin plate, per base box, Pitts.	$5.00	$5.00	$5.00	$5.35
Wire nails, Pittsburgh	2.45	2.40	2.45	2.45

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$34.00	$34.00	$34.00	$34.00
Slabs, Pittsburgh, Chicago	34.00	34.00	34.00	34.00
Rerolling billets, Pittsburgh	34.00	34.00	34.00	34.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	43.00	43.00	43.00	43.00

Pig Iron

	Aug. 19, 1939	July, 1939	May, 1939	Aug., 1938
Bessemer, del. Pittsburgh	$22.34	$22.34	$22.34	$21.34
Basic, Valley	20.50	20.50	20.50	19.50
Basic, eastern, del. Philadelphia	22.34	22.34	22.34	21.34
No. 2 foundry, Pittsburgh	22.21	22.21	22.21	21.21
No. 2, foundry, Chicago	21.00	21.00	21.00	20.00
Southern No. 2, Birmingham	17.38	17.38	17.38	16.38
Southern No. 2, del. Cincinnati	20.89	20.89	20.89	19.89
No. 2X, del. Phila. (differ. av.)	23.215	23.215	23.215	22.215
Malleable, Valley	21.00	21.00	21.00	20.00
Malleable, Chicago	21.00	21.00	21.00	20.00
Lake Sup., charcoal, del. Chicago	28.34	28.34	28.34	28.34
Gray forge, del. Pittsburgh	21.17	21.17	21.17	20.17
Ferromanganese, del. Pittsburgh	85.33	85.33	85.33	97.77

Scrap

Heavy melting steel, Pittsburgh	$16.25	$15.55	$14.55	$15.20
Heavy melt. steel, No. 2, E. Pa.	14.50	13.55	13.15	13.00
Heavy melting steel, Chicago	13.75	13.55	12.75	14.00
Rails for rolling, Chicago	17.75	17.75	17.25	18.25
Railroad steel specialties, Chicago	15.50	15.50	14.75	16.75

Coke

Connellsville, furnace, ovens	$3.75	$3.75	$3.75	$3.75
Connellsville, foundry, ovens	5.00	5.00	5.00	5.00
Chicago, by-product fdry., del.	10.50	10.50	10.50	10.50

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh	2.00c
Chicago, Gary	2.00c
Cleveland	2.00c
Detroit, del.	2.10c
Buffalo	2.00c
Sparrows Point, Md.	2.00c
New York, del.	2.24c
Philadelphia, del.	2.17c
Granite City, Ill.	2.10c
Middletown, O.	2.00c
Youngstown, O.	2.00c
Birmingham	2.00c
Pacific Coast points	2.50c

Cold Rolled

Pittsburgh	3.05c
Chicago, Gary	3.05c
Buffalo	3.05c
Cleveland	3.05c
Detroit, delivered	3.15c
Philadelphia, del.	3.37c
New York, del.	3.39c
Granite City, Ill.	3.15c
Middletown, O.	3.05c
Youngstown, O.	3.05c
Pacific Coast points	3.65c

Galvanized No. 24

Pittsburgh	3.50c
Chicago, Gary	3.50c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown, O.	3.50c
Youngstown, O.	3.50c
Pacific Coast points	4.00c

Black Plate, No. 29 and Lighter

Pittsburgh	3.05c
Chicago, Gary	3.05c
Granite City, Ill.	3.15c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.80c
Pacific Coast	4.50c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Chicago, Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown, O.	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown, O.	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	24.00	35.00
Cold stp.	22.00	22.50	32.00	52.00

Steel Plate

Pittsburgh	2.10c
New York, del.	2.19-2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, Pa.	2.10c
Sparrows Point, Md.	2.10c
Claymont, Del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Pittsburgh	3.35c
Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast points	2.70c

Tin and Terne Plate

Tin Plate, Coke (base box)

Pittsburgh, Gary, Chicago	$5.00
Granite City, Ill.	5.10

Mfg. Terne Plate (base box)

Pittsburgh, Gary, Chicago	$4.30
Granite City, Ill.	4.40

Bars

Soft Steel

(Base, 20 tons or over)

Pittsburgh	2.15c
Chicago or Gary	2.15c
Duluth	2.25c
Birmingham	2.15c
Cleveland	2.15c
Buffalo	2.15c
Detroit, delivered	2.25c
Philadelphia, del.	2.47c
Boston, delivered	2.52c
New York, del.	2.49c
Gulf ports	2.50c
Pacific Coast points	2.75c

Rail Steel

(Base, 15 tons or over)

Pittsburgh	2.00c
Chicago or Gary	2.00c
Detroit, delivered	2.10c
Cleveland	2.00c

Buffalo	2.00c
Birmingham	2.00c
Gulf ports	2.35c
Pacific Coast points	2.60c

Iron

Chicago, Terre Haute	2.05c
Philadelphia	2.37c
Pittsburgh, refined	3.50-8.00c

Reinforcing

*New Billet Bars, Base**

Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt., Pitts.	1.90c
Gulf ports	2.25c
Pacific Coast ports	2.35c

*Rail Steel Bars, Base**

Pittsburgh, Gary Chicago, Buffalo, Cleveland, Birm.	1.80c
Gulf ports	2.15c
Pacific Coast ports	2.25c

**Base prices 20 cents less per 100 lbs. on billet bars, 15 cents less on rail steel, in lots of 20 tons or over of one size, in lengths of 30 feet or over, for shipment at one time to one destination.*

Wire Products

Pitts-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads

Standard wire nails	$2.40
Cement coated nails	$2.40
(Per pound)	
Polished fence staples	2.40c
Galv. barbed wire, standard 12½ gage two-point hog, 80-rod spool $2.74; two-point cattle, 80-rod spool	$2.58
Annealed fence wire	2.90c
Galv. fence wire	3.30c
Woven wire fencing (base C. L. column)	67.00
Single loop bale ties, (base C. L. column)	56.00

To Manufacturing Trade

Base, Pitts. - Cleve. - Chicago-Birmingham (except spring wire)

Bright bess., basic wire	2.60c
Galvanized wire	2.65c
Spring wire	3.20c

Worcester, Mass., $2 higher on bright basic and spring wire.

Cut Nails

Carloads, Pittsburgh $3.60

Cold-Finished Bars

	Carbon	Alloy
Pittsburgh	2.65c	3.35c
Chicago	2.65c	3.35c
Gary, Ind.	2.65c	3.35c
Detroit	2.70c	*3.45c
Cleveland	2.65c	3.35c
Buffalo	2.65c	3.35c

* Delivered.

Alloy Bars (Hot)

(Base, 3 tons or over)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.70c
Detroit, delivered	2.80c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo.	0.55
4600 0.20 to 0.30 Mo. 1.50-2.00 Ni.	1.10
5100 0.80-1.10 Cr.	0.45
5100 Cr. spring flats	0.15
6100 bars	1.20
6100 spring flats	0.85
Cr. N., Van.	1.50
Carbon Van.	0.85
9200 spring flats	0.15
9200 spring rounds, squares	0.40

Electric furnace up 50 cents.

Strip and Hoops

(Base, hot strip, 1 ton or over; cold, 3 tons or over)

Hot Strip, 12-inch and less

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, Birmingham	2.00c
Detroit, del.	2.10c
Philadelphia, del.	2.32c
New York, del.	2.36c
Cooperage hoop, Youngs., Pitts.; Chicago, Birm.	2.10c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.80c
Chicago	2.90c
Detroit, del.	2.90c
Worcester, Mass.	3.00c

Carbon	Cleve., Pitts.
0.26—0.50	2.80c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass. $4 higher.

Commodity Cold-Rolled Strip

Pitts.-Cleve.-Youngstown	2.95c
Detroit, del.	3.05c
Worcester, Mass.	3.95c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill	$40.00
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality	39.00

Cents per pound

Angle bars, billet, mills	2.70c
Do., axle steel	2.35c
Spikes, R. R. base	3.00c
Track bolts, base	4.15c
Car axles forged, Pitts., Chicago, Birmingham	3.15c
Tie plates, base	2.15c

Base, light rails 25 to 60 lbs., 20 lbs., up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine

½ x 6 and smaller	68.5 off
Do. larger, to 1-in.	66 off
Do. 1⅛ and larger	64 off
Tire bolts	52.5 off

Stove Bolts

In packages with nuts attached 72.5 off; in packages with nuts separate 72.5-12½ off; bulk 84 off on 15,000 of 3-inch and shorter, or 5000 over 3-in.

Step bolts	60 off
Elevator bolts	60 off
Plow bolts	68.5 off

Nuts

	U.S.S.	S.A.E.
Semifinished hex. 6-inch and less	67	70
⅞-1-inch	64	65
1⅛ and larger	62	62

Hexagon Cap Screws

Upset, 1-in., smaller	67.5 off

Square Head Set Screws

Upset, 1-in., smaller	75.0 off
Headless set screws	70.0 off

Piling

Pitts., Chgo., Buffalo	2.40c
Gulf ports	2.75c

Rivets, Washers

Structural, Pittsburgh, Cleveland, Chicago	3.40c
⅞-inch and smaller, 11 and 12	63½ 54
Pitts., Chi., Cleve.	65-10 off
Wrought washers, Pitts., Chi., Phila., to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75 off	

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Chicago delivery 2½ and 1½ less, respectively. Wrought pipe, Pittsburgh base.

Butt Weld

Steel

In.	Blk.	Galv.
½	63½	54
¾	66½	58
1—3	68½	60½

Iron

¾	30	13
1—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel

2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55

Iron

2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

Steel

1 to 3, butt weld	67½
2, lap weld	60
2½ to 3, lap weld	63
3½ to 6, lap weld	65
7 and 8, lap weld	64
10-inch lap weld	63½
12-inch, lap weld	62½

Iron

	Blk.	Galv.
¾ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet; f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½"O.D.	13	$ 9.72	$23.71
1¾"O.D.	13	11.06	22.93
2" O.D.	13	12.38	19.35
2¼"O.D.	13	13.79	21.68
2¼"O.D.	12	15.16	.....
2½"O.D.	12	16.58	26.57
2¾"O.D.	12	17.54	29.00
3" O.D.	12	18.35	31.36
3½"O.D.	11	23.15	39.81
4" O.D.	10	28.66	49.90
5" O.D.	9	44.25	73.93
6" O.D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1 "O.D.	13	$ 7.82	$ 9.01
1¼"O.D.	13	9.26	10.67
1½"O.D.	13	10.23	11.79
1¾"O.D.	13	11.64	13.42
2" O.D.	13	13.04	15.03
2¼"O.D.	13	14.54	16.76
2½"O.D.	12	16.01	18.45
2½"O.D.	12	17.54	20.21
2¾"O.D.	12	18.59	21.42
3" O.D.	12	19.50	22.48
3½"O.D.	11	24.62	28.37
4" O.D.	10	30.54	35.20
4½"O.D.	10	37.35	43.04
5" O.D.	9	46.87	54.01
6" O.D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm.	$42.00-43.00
4-in., Birmingham	45.00-46.00
4-in., Chicago	53.80-54.80
6-in. & over, Chicago	50.80-51.80
6-in. & over, east fdy.	46.00
Do., 4-in.	49.00

Class A Pipe $3 over Class B
Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Rerolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary, Cleve., Buffalo, Young., Birm., Sparrows Point	$34.00
Duluth (billets)	36.00
Detroit, delivered	36.00

Forging Quality Billets

Pitts., Chi., Gary, Cleve., Young., Buffalo, Birm.	40.00
Duluth	42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago	34.00
Detroit, delivered	36.00

Wire Rods

Pitts., Cleveland, Chicago, Birmingham No. 5 to ⅜-inch incl.	43.00
Do., over ⅜ to 41/64-in.incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Youngstown, Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.75
Connellsville, fdry.	4.75- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.50- 5.75
Wise county fur.	4.50- 4.75

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	9.75
Chicago, del.	10.50
Terre Haute, del.	10.00
Milwaukee, ovens	10.50
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.00
Indianapolis, del.	10.00
Cincinnati, del.	9.75
Cleveland, del.	10.30
Buffalo, del.	10.50
Detroit, del.	10.25
Philadelphia, del.	10.65

Coke By-Products

Spot, gal., freight allowed east of Omaha

Pure and 90% benzol	16.00c
Toluol, two degree	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
Do. (450 lbs)	15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls. to jobbers	5.75c

Per ton, bulk, f.o.b. port

Sulphate of ammonia	$28.00

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$22.00	$22.50	$21.50	$23.00
Birdsboro, Pa.	22.00	22.50	21.50	23.00
Birmingham, Ala.‡	17.38	.....	16.38	22.00
Buffalo	21.00	21.50	20.00	22.00
Chicago	21.00	21.00	20.50	21.50
Cleveland	21.00	21.00	20.50	21.50
Detroit	21.00	21.00	20.50	21.50
Duluth	21.50	21.50	.....	22.00
Erie, Pa.	21.00	21.50	20.50	22.00
Everett, Mass.	22.00	22.50	21.50	23.00
Granite City, Ill.	21.00	21.00	20.50	21.50
Hamilton, O.	21.00	21.00	20.50	.....
Neville Island, Pa.	21.00	21.00	20.50	21.50
Provo, Utah	19.00	.....	.....	.....
Sharpsville, Pa.	21.00	21.00	20.50	21.50
Sparrow's Point, Md.	22.00	.....	21.50	.....
Swedeland, Pa.	22.00	22.50	21.50	23.00
Toledo, O.	21.00	21.00	20.50	21.50
Youngstown, O.	21.00	21.00	20.50	21.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:				
Akron, O., from Cleveland	22.39	22.39	21.89	22.89
Baltimore from Birmingham	22.78	.....	21.66	.....
Boston from Birmingham	22.12	.....	.....	.....
Boston from Everett, Mass.	22.50	23.00	22.00	23.50
Boston from Buffalo	22.50	23.00	22.00	23.50
Brooklyn, N. Y., from Bethlehem	24.50	25.00	.....	.....
Canton, O., from Cleveland	22.39	22.39	21.89	22.89
Chicago from Birmingham	†21.22	.....	.....	.....
Cincinnati from Hamilton, O.	21.24	22.11	21.61	.....
Cincinnati from Birmingham	21.06	.....	20.06	.....
Cleveland from Birmingham	21.32	.....	20.82	.....
Mansfield, O., from Toledo, O.	22.94	22.94	22.44	22.44
Milwaukee from Chicago	22.10	22.10	21.60	22.60
Muskegon, Mich., from Chicago, Toledo or Detroit	24.19	24.19	23.69	24.69
Newark, N. J., from Birmingham	23.15	.....	.....	.....
Newark, N. J., from Bethlehem	23.53	24.03	.....	.....
Philadelphia from Birmingham	22.46	.....	21.96	.....
Philadelphia from Swedeland, Pa.	22.84	23.34	22.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	23.45	23.45	22.95	22.95
St. Louis, northern	21.50	21.50	21.00	.....
St. Louis from Birmingham	†21.12	.....	20.62	.....
St. Paul from Duluth	23.63	23.63	.....	24.13

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $26.50, base; $27.74 delivered Philadelphia.

Gray Forge		Charcoal	
Valley furnace	$20.50	Lake Superior fur.	$25.00
Pitts. dist. fur	20.50	do., del. Chicago	28.34
		Lyles, Tenn.	23.50

†Silvery

Jackson county, O., base: 6-6.50 per cent $25.50; 6.51-7—$26.00; 7-7.50—$26.50; 7.51-8—$27.00; 8-8.50—$27.50; 8.51-9—$28.00; 9-9.50—$28.50; Buffalo, $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base; Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	55.10
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead - burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickset magnesite grains, f.o.b. Chewelah, Wash., net, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar

Washed gravel, duty pd., tide, net ton	$21.00-21.50
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail	18.00
Do. barge	19.00
No. 2 lump	18.00-19.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $80.00
Do., del. Pittsburgh 85.33

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 28.00
Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., ton lot 80.50
Do., 75 per cent 126.00
Spot, $5 a ton higher.

Silicoman, 2½ carbon 88.00
2% carbon, 93.00; 1%, 103.00
Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.60-1.65

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80-2.90

Ferrophosphorus, gr. ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., contained cr., del. carlots 10.50c
Do., ton lots 11.25c
Do., less-ton lots 11.50c
67-72% carloads, 2% carbon, per lb. contained chrome 16.50c
Do., ton lots 17.25c
Do., less-ton lots 17.75c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40-45%, lb., con. ti., f.o.b. Niagara Falls, ton lots $1.23
Do., less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb. 1.35
Do, less-ton lots 1.40
Spot 5c higher

Ferrocolumbium, 50-60%, contract, lb. con. col., f.o.b. Niagara Falls $2.25
Do., less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50
Do, spot 145.00
Do, contract, ton lots 145.00
Do, spot, ton lots 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50
Do, spot 160.00
Do, contract, ton lots 160.00
Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c
Spot ½c lb. higher

Chromium Briquets, contract, any quantity, freight allowed, lb. 7.25c
Do, spot carlots, bulk 7.50c
Do, ton lots 8.00c
Do., less-ton lots 8.25c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.00
Do, smaller lots 2.10

Vanadium Pentoxide, contract, lb. contained $1.10
Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c
Do, spot 85.00c
88% chrome, contract 79.00c
Do, spot 84.00c

Silicon Metal, 1% iron, contract, carlots, 2 x ⅛-in., lb. 14.00c
Do., 2% 12.50c
Spot ¼c higher

Silicon Briquets, contract carloads freight allowed, ton $69.50
Carload, spot 74.50
Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, bulk freight allowed, lb. 4.50c
Ton lots 5.00c
Less-ton lots 5.25c
Spot ¼c higher

Zirconium Alloy, 12-15%, contract, carloads, gross ton $97.50
Do, spot 102.50

34-40%, contract, carloads, lb., alloy 14.00c
Do, ton lots 15.00c
Do, less-ton lots 16.00c
Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa. 200-lb. kegs, lb. $2.60
Do, 100-200 lb. lots 2.75
Do, under 100-lb. lots 3.00

Molybdenum Oxide Briquets, 48-52% molybdenum, per pound contained, f.o.b. producers' plant 80.00c

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets: Hot Rolled	Sheets: Cold Rolled	Sheets: Galv. No. 24	Cold Rolled Strip	Cold Drawn Bars: Carbon	Cold Drawn Bars: SAE 2300	Cold Drawn Bars: SAE 3100
Boston	3.88	4.06	5.06	3.85	3.85	5.66	3.71	4.78	4.61	3.46	4.13	8.63	7.23
New York (Met.)	3.84	3.96	3.96	3.76	3.75	5.56	3.40	4.60	4.50	3.51	4.09	8.59	7.19
Philadelphia	3.60	3.60	4.10	3.40	3.40	5.00	3.40	4.55	4.28	3.51	4.06	8.56	7.16
Baltimore	3.70	3.85	3.80	3.55	3.55	5.00	3.55	4.90	5.05	....	4.05	....	....
Norfolk, Va.	3.90	4.00	....	3.75	3.75	5.20	3.75	....	5.40	....	4.15	....	....
Buffalo	3.35	3.82	3.82	3.62	3.40	5.25	3.35	4.40	4.40	3.42	3.75	8.15	6.75
Pittsburgh	3.35	3.60	3.60	3.40	3.40	5.00	3.35	....	4.50	3.35	3.65	8.35	6.95
Cleveland	3.25	3.50	3.50	3.40	3.58	5.18	3.35	4.55	4.62	3.20	3.75	8.15	6.75
Detroit	3.33	3.43	3.68	3.60	3.65	5.27	3.43	4.50	4.59	3.40	3.80	8.45	7.05
Cincinnati	3.60	3.67	3.67	3.65	3.68	5.28	3.42	....	4.57	3.45	4.00	8.50	7.10
Chicago	3.50	3.60	3.60	3.55	3.55	5.15	3.35	4.30	4.25	3.50	3.75	8.15	6.75
Twin Cities	3.75	3.85	3.85	3.80	3.80	5.40	3.60	4.95	4.50	3.83	4.34	8.84	7.44
Milwaukee	3.63	3.73	3.73	3.68	3.68	5.28	3.48	4.43	4.38	....	3.88	8.38	6.98
St. Louis	3.62	3.72	3.72	3.47	3.47	5.07	3.38	4.32	4.52	3.61	4.02	8.52	7.12
Kansas City	4.05	4.15	4.15	4.00	4.00	5.60	3.90	....	5.00	....	4.30	....	....
Memphis	3.90	4.00	4.00	3.95	3.95	5.71	3.75	....	5.00	....	4.31	....	....
Chattanooga	3.80	3.90	3.90	3.85	3.85	5.80	3.65	....	4.40	....	4.39	....	....
Tulsa, Okla.	4.54	4.64	4.64	4.41	4.41	6.01	4.32	....	5.39	....	4.79	....	....
Birmingham	3.50	3.60	3.60	3.55	3.55	5.88	3.35	....	4.85	....	4.43	....	....
New Orleans	3.85	4.65	4.65	3.80	3.80	5.75	4.10	....	4.60	5.00	5.10	....	....
Houston, Tex.	3.50	5.85	6.25	4.05	4.05	5.65	3.95	....	5.25	....	....	....	....
Seattle	3.90	4.10	5.45	3.85	3.95	5.75	3.80	6.50	5.00	....	5.60	....	....
Portland, Oreg.	4.00	4.40	6.10	4.00	4.00	5.50	3.95	6.50	4.75	....	5.85	....	....
Los Angeles	4.00	4.50	6.35	4.00	4.00	6.20	4.20	6.30	5.00	4.45	6.00	10.40	9.55
San Francisco	3.50	3.90	6.00	3.45	3.45	5.05	3.45	6.40	5.15	....	6.55	10.65	9.80

	SAE Hot-rolled Bars (Unannealed): 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series
Boston	4.18	7.50	6.05	5.80	7.90
New York (Met.)	4.04	7.35	5.90	5.65	....
Philadelphia	3.85	7.31	5.86	5.61	7.71
Baltimore	3.85	....	....	....	....
Norfolk, Va.	....	....	....	....	....
Buffalo	3.55	7.10	5.65	5.40	7.50
Pittsburgh	3.40	7.35	5.95	5.50	7.60
Cleveland	3.30	7.30	5.85	5.85	7.70
Detroit	3.38	7.42	5.97	5.72	7.19
Cincinnati	3.65	7.44	5.99	5.74	7.84
Chicago	3.70	7.10	5.65	5.40	7.50
Twin Cities	3.95	7.45	6.00	6.09	8.19
Milwaukee	3.78	7.33	5.88	5.63	7.73
St. Louis	3.82	7.47	6.02	5.77	7.87
Seattle	5.65	....	7.80	7.65	8.45
Portland, Oreg.	5.70	....	7.80	7.65	8.50
Los Angeles	4.65	9.40	8.55	8.40	9.05
San Francisco	4.50	9.65	8.80	8.65	9.30

BASE QUANTITIES

Soft Bars, Bands, Hoops, Plates, Shapes, Floor Plates, Hot Rolled Sheets and SAE 1035-1050 Bars: Base, 400-1999 pounds, except 0-1999 pounds (hot rolled sheets only) in New York; 300-1999 pounds in Los Angeles; 0-299 pounds (hoops only) in San Francisco; 300-4999 pounds in Portland, Seattle; 400-14,999 pounds in Twin Cities; 400-3999 pounds in Birmingham.

Cold Rolled Sheets: Base, 400-1499 pounds in Chicago, Cincinnati, Cleveland, Detroit, New York and St. Louis; 450-3749 pounds in Boston; 500-1499 pounds in Buffalo; 1000-1999 pounds in Philadelphia; 300-4999 pounds in San Francisco and Portland; any quantity in Twin Cities.

Galvanized Sheets: Base, 0-1499 pounds in New York, Tulsa; 150-1499 pounds in Cleveland, Pittsburgh; 1-9 bundles in Baltimore, Norfolk; 1-6 bundles in Los Angeles; 300-4999 pounds in Portland, Seattle, San Francisco; 450-3749 pounds in Boston; 500-1499 pounds in Birmingham, Chicago, Cincinnati, Detroit, St. Louis; 1500 pounds and over in Chattanooga, Philadelphia; any quantity in Twin Cities.

Cold Rolled Strip: No base quantity; extras apply on lots of all size.

Cold Finished Bars: Base, 1000 pounds and over, except 0-299 pounds in San Francisco.

SAE Hot Rolled Alloy Bars: Base, 1000 pounds and over, except 0-4999 pounds in San Francisco; 0-1999 in Portland.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, Aug. 17

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Quoted in dollars at current value	Continental Channe or North Sea ports, gross tons **Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$23.40 5 0 0	$18.32	2 3 0
Basic bessemer	....	19.59	2 6 0
Hematite, Phos. .03-.05	23.57 5 5 0*	.....	.....
Billets	$34.52 7 7 6	$38.34	4 10 0
Wire rods, No. 5 gage	53.24 11 7 6	43.67	5 2 6
Standard rails	$44.46 9 10 0	$48.99	5 15 0
Merchant bars	2.30c 11 0 0	1.81c to 1.90c	4 15 0 to 5 0 0
Structural shapes	2.09c 10 0 0	1.76c to 1.81c	4 12 6 to 4 15 0
Plates, †¼ in. or 5 mm.	2.29c 10 18 9	2.14c to 2.33c	5 12 6 to 6 2 6
Sheets, black, 24 gage or 0.5 mm	2.72c 13 0 0	2.90c	7 12 6*
Sheets, gal., 24 ga., corr.	3.29c 15 15 0	3.52c	9 5 0
Bands and strips	2.56c 12 5 0	1.90c to 1.95c	5 0 0 to 5 2 6
Plain wire, base	4.08c 19 10 0	2.33c to 2.66c	6 2 6 to 7 0 0
Galvanized wire, base	4.86c 23 5 0	2.99c	7 17 6
Wire nails, base	....	2.66c to 2.76c	7 0 0 to 7 5 0
Tin plate, box 108 lbs.	$ 4.74 1 0 3	....	.....

British ferromanganese $80.00 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d		French Francs		Belgian Francs		Rmsh Mark
Fdy. pig iron, Si. 2.5	$23.17	4 19 0(a)	$18.00	679.30	$18.70	550	$25.28	63
Basic bess. pig iron	21.65	4 12 6(a)	.....	....	.....	...	27.89 (b)	69.50
Furnace coke	5.38	1 4 2	5.96	225	6.87	202	7.62	19
Billets	34.52	7 7 6	27.27	1,029	29.24	860	38.73	96.50
Standard rails	1.99c	9 10 0	1.69c	1,405	2.06c	1,375	2.38c	132
Merchant bars	2.42c	11 12 0††	1.56c	1,304	1.65c	1,100	1.98c	110
Structural shapes	2.17c	10 8 0††	1.52c	1,268	1.65c	1,100	1.93c	107
Plates, †¼-in. or 5 mm.	2.29c	10 19 3††	1.98c	1,650	2.06c	1,375	2.29c	127
Sheets, black	3.08c	14 15 0§	2.35c	1,958‡	2.36c	1,575‡	2.59c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.61c	17 5 0	3.42c	2,850	4.05c	2,700	6.66c	370
Plain wire	4.08c	19 10 0	2.40c	2,000	2.48c	1,650	3.11c	173
Bands and strips	2.58c	12 7 0††	1.73c	1,444	1.95c	1,300	2.29c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. *Close annealed. ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 75 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; †indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1.	†12.00
Bos. dock No. 1 exp.	14.00
New Eng. del. No. 1	13.50-13.75
Buffalo, No. 1	14.50-15.00
Buffalo, No. 2	12.50-13.00
Chicago, No. 1	13.50-14.00
Chicago, auto, no alloy	12.50-13.00
Chicago, No. 2 auto	10.50-11.00
Cincinnati, dealers	11.50-12.00
Cleveland, No. 1	14.50-15.00
Cleveland, No. 2	13.50-14.00
Detroit, No. 1	11.00-11.50
Detroit, No. 2	10.00-10.50
Eastern Pa., No. 1	16.50
Eastern Pa., No. 2	14.50
Federal, Ill.	11.50-12.00
Granite City, R. R.	12.00-12.50
Granite City, No. 2	11.00-11.50
Los Angeles, No. 1	12.50-13.00
Los Angeles, No. 2	11.50-12.00
L. A., No. 1 f.a.s.	14.50-15.00
L. A., No. 2 f.a.s.	13.00-13.50
N. Y. dock No. 1 exp.	12.50
Pitts., No. 1 (R. R.)	17.00-17.50
Pittsburgh, No. 1	16.00-16.50
Pittsburgh, No. 2	14.00-14.50
St. Louis, R. R.	12.00-12.50
St. Louis, No. 2	11.00-11.50
San Francisco, No. 1	13.00-13.50
Seattle, No. 1	11.00-12.00
Toronto, dlrs. No. 1	9.25- 9.75
Valleys, No. 1	15.00-15.50

COMPRESSED SHEETS

Chicago, factory	13.00-13.50
Chicago, dealers	11.50-12.00
Cincinnati, dealers	11.00-12.00
Cleveland	14.00-14.50
Detroit	12.50-13.00
E. Pa., new mat.	16.50
E. Pa., old mat.	12.50-13.00
Los Angeles	11.00-11.50
Pittsburgh	16.00-16.50
St. Louis	9.00- 9.50
Valleys	15.00-15.50

BUNDLED SHEETS

Buffalo, No. 1	12.75-13.25
Buffalo, No. 2	11.25-11.75
Cleveland	9.50-10.00
Los Angeles	14.00
Pittsburgh	14.50-15.00
St. Louis	7.00- 7.50
Toronto, dealers	8.00- 8.50

SHEET CLIPPINGS, LOOSE

Chicago	8.00- 8.50
Cincinnati, dealers	7.00- 7.50
Detroit	9.00- 9.50
†Los Angeles	3.75- 4.00
St. Louis	6.00- 6.50
Toronto, dealers	4.25- 4.75

BUSHELING

Buffalo, No. 1	12.50-13.00
Chicago, No. 1	12.50-13.00
Cincin., No. 1, deal.	7.00- 7.50
Cincinnati, No. 2	2.25- 2.75
Cleveland, No. 2	8.00- 8.50
Detroit, No. 1, new	11.25-11.75
Valleys, new, No. 1	14.25-14.75
Toronto, dealers	3.75- 4.25

MACHINE TURNINGS (Long)

Birmingham	†4.50- 5.00
Buffalo	8.50- 9.00
Chicago	7.00- 7.50
Cincinnati, dealers	4.50- 5.00
Cleveland, no alloy	7.50- 8.00
Detroit	6.00- 6.50
Eastern Pa.	9.50
Los Angeles	4.50- 5.00
New York	†3.50- 4.00
Pittsburgh	10.50-11.00
St. Louis	4.50- 5.00
Toronto, dealers	4.25- 4.75
Valleys	9.50-10.00

SHOVELING TURNINGS

Buffalo	9.50-10.00
Cleveland	7.50- 8.00
Chicago	7.00- 7.50
Chicago, spcl. anal.	8.00- 8.50
Detroit	7.00- 7.50
Pitts., alloy-free	13.00-13.50

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	3.75
Buffalo	8.00- 8.50
Cincinnati, dealers	3.25- 3.75
Cleveland	8.25- 8.75
Eastern Pa.	6.50- 7.00
Detroit	6.00- 6.50
New York	†2.50- 3.00
Pittsburgh	9.25- 9.75
Toronto, dealers	3.50- 4.00

AXLE TURNINGS

Boston district	†7.50
Buffalo	11.00-11.50
Chicago, elec. fur.	13.50-14.00
East. Pa., elec. fur.	13.50-14.00
St. Louis	9.00- 9.50
Toronto	4.00- 4.25

CAST IRON BORINGS

Birmingham	†6.00- 6.50
Boston dist. chem.	†4.75
Buffalo	7.50- 8.00
Chicago	6.50- 7.00
Cincinnati, dealers	3.25- 3.75
Cleveland	8.25- 8.75
Detroit	6.00- 6.50
E. Pa., chemical	10.00-11.00
New York	†3.50- 4.00
St. Louis	2.50- 3.00
Toronto, dealers	3.75- 4.25

RAILROAD SPECIALTIES

Chicago	15.25-15.75

ANGLE BARS—STEEL

Chicago	15.50-16.00
St. Louis	13.00-13.50

SPRINGS

Buffalo	16.00-16.50
Chicago, coil	16.00-16.50
Chicago, leaf	15.00-15.50
Eastern Pa.	18.00-18.50
Pittsburgh	19.00-19.50
St. Louis	14.50-15.00

STEEL RAILS, SHORT

Birmingham	†12.00-12.50
Buffalo	17.50-18.00
Chicago (3 ft.)	16.00-16.50
Chicago (2 ft.)	16.50-17.00
Cincinnati, dealers	17.50-18.00
Detroit	17.50-18.00
Los Angeles	15.00-15.50
Pitts., 3 ft. and less	19.00-19.50
St. Louis, 2 ft. & less	15.50-16.00

STEEL RAILS, SCRAP

Boston district	†13.50-14.00
Buffalo	16.00-16.50
Chicago	13.50-14.00
Cleveland	16.50-17.00
Pittsburgh	17.50-18.00
St. Louis	13.50-14.00
Seattle	16.00

FROGS, SWITCHES

Chicago	13.50-14.00
St. Louis, cut	14.50-15.00

ARCH BARS, TRANSOMS

St. Louis	13.50-14.00

PIPE AND FLUES

Chicago, net	8.50- 9.00
Cincinnati, dealers	6.50- 7.00

RAILROAD GRATE BARS

Buffalo	10.00-10.50
Chicago, net	7.50- 8.00
Cincinnati, dealers	6.25- 6.75
Eastern Pa.	13.50-14.00
New York	†8.50- 9.00
St. Louis	8.00- 8.50

RAILROAD WROUGHT

Birmingham	†11.00-11.50
Boston district	†9.50-10.00
Eastern Pa., No. 1	16.50-17.00
St. Louis, No. 1	9.75-10.25
St. Louis, No. 2	12.00-12.50

FORGE FLASHINGS

Boston district	†8.25- 8.50
Buffalo	12.25-12.75
Cleveland	11.00-11.50
Detroit	10.50-11.00
Los Angeles	9.00
Pittsburgh	15.00-15.50

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	15.75-16.25

LOW PHOSPHORUS

Cleveland, crops	17.50-18.00
Eastern Pa., crops	18.50-19.00
Pitts., billet, bloom, slab crops	20.00-20.50

LOW PHOS. PUNCHINGS

Buffalo	16.00-16.50
Chicago	16.00-16.50
Cleveland	15.00-15.50
Eastern Pa., crops	17.50-18.00
Pittsburgh	18.25-18.75
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	†14.00-15.00
Boston	15.00-15.50
Chicago	17.50-18.00
New York	†14.00-14.50
Eastern Pa.	17.00-17.50
St. Louis	16.00-16.50

STEEL CAR AXLES

Birmingham	†15.00-16.00
Boston district	†14.50
Chicago, net	17.00-17.50
Eastern Pa.	20.50-21.00
St. Louis	17.00-17.50

LOCOMOTIVE TIRES

Chicago (cut)	15.50-16.00
St. Louis, No. 1	12.25-12.75

SHAFTING

Boston district	†15.75-16.00
New York	†16.00-16.50
Eastern Pa.	21.50-22.00
St. Louis, 1¼-3¾"	15.50-16.00

CAR WHEELS

Birmingham	†13.50-14.00
Boston dist., iron	†10.00
Buffalo, steel	16.00-16.50
Chicago, iron	13.50-14.00
Chicago, rolled steel	15.00-15.50
Cincin., iron, deal.	13.50-14.00
Eastern Pa., iron	16.50-17.00
Eastern Pa., steel	18.00-18.50
Pittsburgh, iron	16.00-16.50
Pittsburgh, steel	19.00-19.50
St. Louis, iron	14.75-15.25
St. Louis, iron	15.00-15.50

NO. 1 CAST SCRAP

Birmingham	†13.00-13.50
Boston, No. 1 mach.	†11.25-11.50
N. Eng. del. No. 2	12.00-12.50
N. Eng. del. textile	12.50-13.00
Buffalo, cupola	14.00-14.50
Buffalo, mach.	15.50-16.00
Chicago, agri. net	9.50-10.00
Chicago, auto net	12.50-13.00
Chicago, railroad net	11.00-11.50
Chicago, mach. net	12.00-12.50
Cincin., mach. deal.	12.75-13.25
Cleveland, mach.	17.00-17.50
Detroit, cupola, net	13.00-13.50
Eastern Pa., cupola	16.50-17.00
E. Pa., mixed yard	14.00-14.50
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	15.50-16.00
San Francisco, del.	13.50-14.00
Seattle	12.50-13.50
St. Louis, cupola	12.50-13.00
St. Louis, agri. mach.	14.00-14.50
St. L., No. 1 mach.	14.00-14.50
Toronto, No. 1, mach., net	12.00-12.50

HEAVY CAST

Boston dist. break.	†10.50-10.75
New England, del.	12.50-13.00
Buffalo, break.	11.50-12.00
Cleveland, break, net	13.00-13.50
Detroit, auto net	13.00-13.50
Detroit, break	10.50-11.00
Eastern Pa.	16.00-16.50
Los Ang., auto, net.	13.50
New York, break.	†11.00-11.50
Pittsburgh, break	13.00-13.50

STOVE PLATE

Birmingham	†7.50- 8.00
Boston district	†8.00- 8.25
Buffalo	11.50-12.00
Chicago, net	7.75-8.25
Cincinnati, dealers	6.25- 6.75
Detroit, net	7.00- 7.50
Eastern Pa.	13.50-14.00
New York, fdy.	†10.00-10.50
St. Louis	7.50- 8.00
Toronto dealers, net	6.50- 7.00

MALLEABLE

Birmingham, R. R.	†10.50-11.00
New England, del.	11.50-12.50
Buffalo	14.00-14.50
Chicago, R. R.	15.00-15.50
Cincin., agri., deal.	11.00-11.50
Cleveland, rail	15.50-16.00
Eastern Pa., R. R.	16.50-17.00
Los Angeles	17.50-18.00
Pittsburgh, rail	17.00-17.50
St. Louis, R. R.	12.50-13.00

Iron Ore

Lake Superior Ore

Gross ton, 51½ %

Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbessemer	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbessemer	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-9.25
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, c.i.f. Atlantic	
Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	12.00
Swedish low phos.	12.00
Spanish No. Africa basic, 50 to 60% nom.	11.00
Tungsten, short ton unit, duty pd. nom.	18.50-19.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$23.00-24.00
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52% nom.	29.00
So. African, 50-52% nom.	29.00
Indian, 49-50%	27.00-28.00

Sheets, Strip

Sheet & Strip Prices, Pages 66, 67

Pittsburgh — Automotive releases still are small, heavy shipments not being looked for until early September. Meanwhile, miscellaneous business is well sustained. Sheet production is slow to increase, recently being about 60 per cent. Strip output is near 45 per cent for hot mills. Bookings and shipments of flat-rolled the first half of August were substantially heavier than a month ago, and this margin is expected to hold.

Cleveland—Business is sustained despite day-to-day fluctuations. Producers' backlogs of low-price tonnage are declining fairly rapidly as a result of active needs of miscellaneous users. Possibility is seen of a lag in demand from that direction early next quarter, although consumer inventories are said to be only moderate. Automotive releases are improving slowly.

Chicago—Automotive releases of sheets and strip continue to increase gradually, although some producers note a leveling off in total demand. Bookings are confined principally to small spot needs of miscellaneous users, with prices steady. Heavier demand is indicated by early September.

New York—Specifications have tapered slightly but still are regarded as satisfactory. Building trades and some makers of household equipment are buying less actively. Sheet consumption generally is better than expected. While still too early for action on fourth quarter prices, the trade looks for a consolidation of recent gains in strengthing the market rather than a general increase in official quotations.

Specifications for narrow cold-rolled strip are heavy, but new buying is slack. On what new business is being taken, however, prices are firm. Re-rollers producing specialties are operating from 60 to 65 per cent, with additional tonnage expected from the automotive trade shortly.

Philadelphia—Sellers are fairly well satisfied with releases so far this month. Some believe they will be able to complete most shipments against low-price tonnage by the end of this quarter. Others doubt this but look for specifications to be in by that time.

Buffalo—Improved demand for sheets and strip is sustained despite relatively low level of automotive tonnage. Buying is widely diversified. Current prices are holding on recent orders. Production continues 55 to 60 per cent.

St. Louis—Demand is slightly heavier, both orders and releases showing small gains. Mills are attempting to clear low-price contracts this quarter, but some tonnage is expected to lap over into next period.

Cincinnati—Sheet demand from miscellaneous users is being maintained despite usual retarding influences of the season. Automotive specifications are slower than expected, the result of delays in starting on new models. Galvanized business continues relatively good.

Plates

Plate Prices, Page 66

Chicago—Plate demand is steady, aided by shipbuilding and pipe line work. Miscellaneous fabricators are ordering at unchanged rates but are maintaining fairly good demand. Prices are spotty but show some improvement since earlier this year.

Boston—Spotty improvement is noted in plate demand, with ship-

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yard specifications well maintained. Most other larger consumers, however, continue to lag. Pulp and paper mill buying is limited, although some potential digester work pends. Bids are in on filter basins, New Britain, Conn., taking close to 1000 tons.

New York—Improvement in demand is slow, but plate sellers are more optimistic. Considerable oil refinery work is under consideration, and although this construction may not be reflected in much plate tonnage for the present, it is thought probable that specifications later in the year and through the winter will be heavy. Shipwork continues to take a substantial tonnage. Consolidated Edison Co. plans erection of new floor steel and a steel stack.

Philadelphia—Shipwork continues the most promising plate outlet. Sun Shipbuilding & Dry Dock Co. is considered a strong contender for five additional C-1 ships about to be placed by the maritime commission. These will be in addition to five just placed with Federal Shipbuilding & Dry Dock Co., and five previously let to Tampa Shipbuilding & Engineering Co. and four awarded Consolidated Steel Corp. Tank and boiler tonnage is light.

Birmingham, Ala.—Plate demand is steady and fairly active. Tank builders are taking some tonnage and a considerable volume is going into specialties.

Seattle—Business is slow with fabricators, confined to small tank and boiler jobs. Largest project pending is the Mud Mountain dam, bids to United States engineer, Seattle, Aug. 21, requiring 1400 tons. Reclamation bureau will soon call for bids on 7000 feet of 24 and 26-inch steel pipe for the Leavenworth, Wash., project.

San Francisco—Western Pipe & Steel Co. is low on 2600 tons of plates for 103-inch welded steel pipe line for the Mono Craters tunnel and Grant Lake reservoir for the water and power department, Los Angeles. Alternate bids were taken on other types of pipe. Awards totaled 315 tons, bringing the aggregate to 24,314 tons, compared with 21,755 tons a year ago.

Plate Contracts Placed

900 tons, seven storage tanks, Standard Oil Co. of Indiana, Jones Island, Wis., to Chicago Bridge & Iron Co., Chicago.

Plate Contracts Pending

11,405 tons, plates, strip, sheets, mostly plates, bureau of supplies and accounts, navy department, Washington, for delivery at Brooklyn and Philadelphia; bids Aug. 24.

2600 tons, 103-inch welded steel pipe, water and power department, Los Angeles, specification 2952, Mono Craters tunnel and Grant Lake reservoir; Western Pipe & Steel Co., San Francisco, low on general contract for welded steel pipe.

400 tons, pilot ship; Pusey & Jones Corp., Wilmington, Del., low. Gibbs & Cox, New York, engineers.

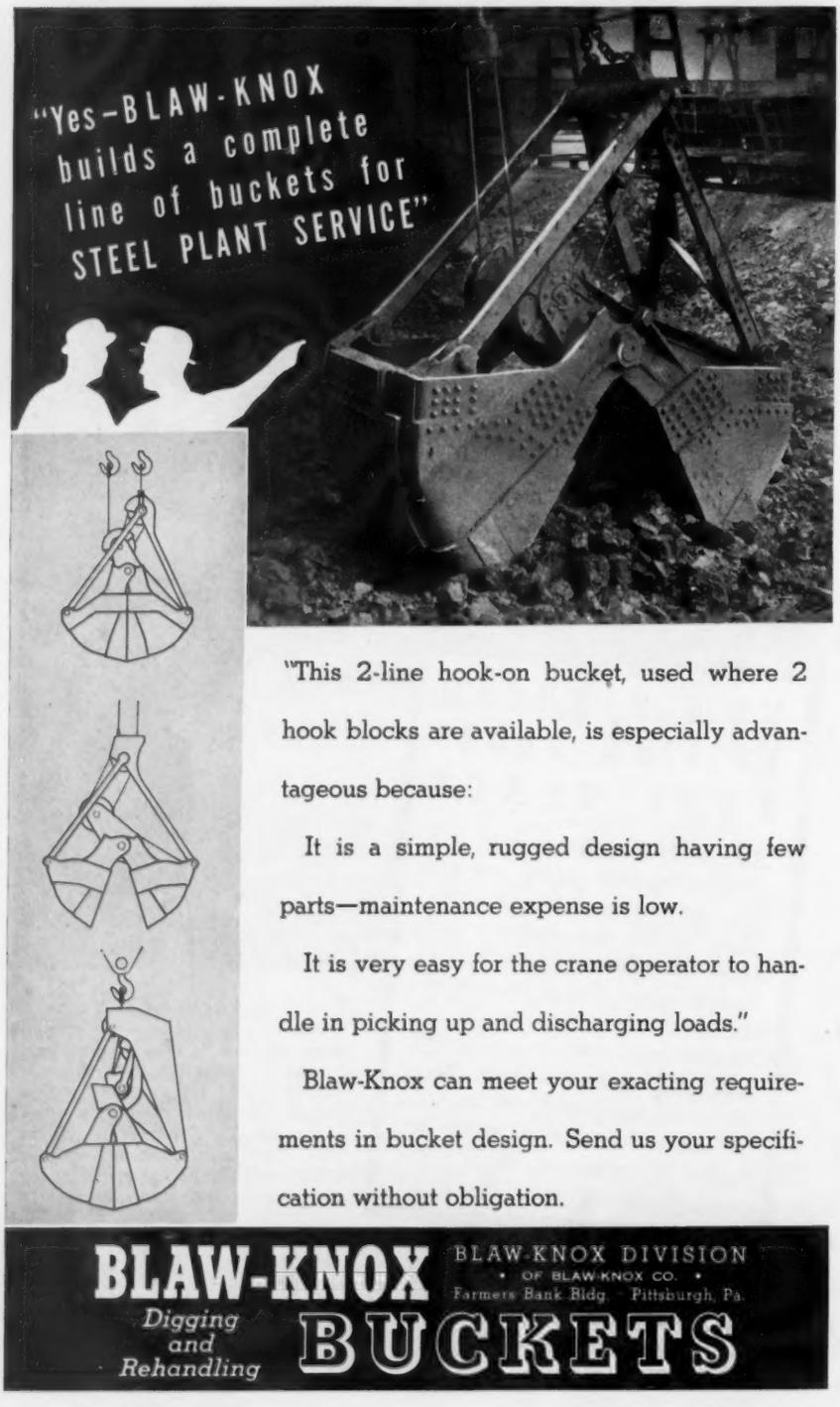
300 tons, high tensile, galvanized, Norfolk, Va., navy yard; bids Aug. 24.

Bars

Bar Prices, Page 66

Cleveland—Bar demand has been irregular lately without varying far from the level of early Agust. Influence of new model preparations in the automotive industry gradually is becoming more pronounced on specifications for hot-rolled, alloy and cold-drawn material. Smaller users still provide the bulk of business.

Revised quantity extras on hot-rolled alloy bars are expected to be announced shortly. Changes looked for in cold-drawn carbon bar extras,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in view of the recent alterations in hot-rolled carbon extras, now are thought likely to be deferred until fourth quarter books for the latter material are opened early next month.

Boston—Steady miscellaneous demand holds for alloy bars. Most business is moving through distributors who are releasing more tonnage from mills. Textile machinery builders have bought heavier of late, including hot-rolled and cold finished. Small tool and forging shops are buying small lots. Bar prices for all finishes are steady.

New York—Specifications for hot-rolled carbon bars are slightly heavier this month. Releases from machine tool builders and auto accessory makers show gains, and shipments to railroads for equipment repairs are more active. Action on cold-finished bar quantity extras is expected shortly. Revisions were in prospect when extras on hot bars were changed recently but were deferred. The latter are expected to hold despite protests from small consumers and warehouses.

Philadelphia — Leading producers are revising extras on alloy bars in line with recent changes on hot-rolled carbon bars. This is expected to lead to revisions by cold-drawn bar producers who have been withholding action until the new schedule on hot-rolled carbon material became established. Alloy billet extras also are being changed. Bar specifications are well sustained and may be augmented soon by orders from consumers wishing to take in extra tonnage before old contracts expire Sept. 30.

Birmingham, Ala. — Bar demand is consistent, with production estimated unofficially at about 70 per cent.

Buffalo—Bar production continues to expand gradually under the impetus of miscellaneous demand. Automotive releases still are small but shortly are counted on to push rolling schedules to the best pace for the year.

Pipe

Pipe Prices, Page 67

Boston—Cast pipe buying continues brisk, being made up mostly of numerous small orders. An exception is a large order for Wakefield, Mass., placed with United States Pipe & Foundry Co., likely to exceed 1000 tons. The treasury department, Boston, is also buying 260 tons. The district foundry continues on capacity schedules, with releases against old orders active. Steel pipe demand is off slightly and resale prices are still weak. Small-lot demand prevails for wrought pipe.

Pittsburgh — Temporary shutting off of oil supplies in several states is expected to have only slight effect on pipe demand. Business in oil country products has been augmented substantially by line pipe orders, larger pipe sizes moving well. Standard pipe is slightly less active. Pressure and mechanical tubing still are slow. Prices are firm despite scattered weakness in secondary markets.

Cleveland—Line pipe business is the best in at least two years and is supplementing fairly active demand for standard pipe. Oil well casing is relatively slow. A fairly large tonnage of line pipe has been booked in recent months in smaller lots, in addition to several orders for long lines. Among the latter is 27,000 tons for a gas line between Sioux City, Iowa, and Minneapolis. Additional business is pending.

Birmingham, Ala. — Pipe plants are holding reasonably close to the five and six-day week. Improved demand is reported in some smaller sizes. Inquiries are off somewhat

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from two weeks ago, and no large contracts are in evidence.

Seattle—Largest project pending involves 550 tons for McChord Field, Wash., Central Construction Co., Seattle, low. Awards include 100 tons of 6 and 8-inch for Gilbert water district, Portland. Auburn, Wash., has started a $16,311 water system improvement, involving an unstated tonnage of 12-inch pipe. Waterville, Wash., has retained C. W. Nash, Wenatchee, Wash., to survey for proposed system improvement.

San Francisco—Movement of cast iron pipe is restricted to lots of less than 100 tons. Awards so far this year aggregate 21,608 tons, compared with 19,447 tons a year ago. American Cast Iron Pipe Co. is low on 153 tons of 6-inch pipe for Sacramento, Calif.

Cast Pipe Placed

153 tons, 6-inch, Class 150, Sacramento, Calif.; American Cast Iron Pipe Co., Birmingham, Ala., low.

100 tons or more, 6 and 8-inch Gilbert district, Portland, Oreg., to United States Pipe & Foundry Co., Burlington, N. J.

Steel Pipe Placed

27,000 tons, 250 miles of 16-inch line pipe for Northern Natural Gas Co. line between Sioux City, Iowa, and Minneapolis, divided among National Tube Co., Republic Steel Corp. and Youngstown Sheet & Tube Co.

Cast Pipe Pending

550 tons, McChord Field, Wash., improvement; Central Construction Co., Seattle, low at $48,748.

255 tons, 6 and 8-inch, procurement division, treasury department, Boston.

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"TOUGHEST WELD I EVER TRIED TO BUST"
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"COLDEST-RUNNING ROD I EVER HAD"
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Rails, Cars

Track Material Prices, Page 67

Small rail buying adds somewhat to mill backlogs, Great Northern placing 550 tons and Monongahela railroad 1000 tons with Carnegie-Illinois Steel Corp. Releases have been slow and rail mills continue rolling longer than had been expected, though at reduced rate.

Minneapolis & St. Louis is asking bids on 35 forty-ton automobile cars and Tennessee Coal, Iron & Railroad Co. on 49 seventy-ton ore cars. St. Louis Public Service Co. has placed 100 street cars.

Union Pacific, Southern Pacific and Chicago & North Western plan to buy two streamlined trains, one to replace the train wrecked recently and the other for Chicago-Los Angeles service.

New York board of transportation will open bids Aug. 22 on 150 cars for the independent subway system, with option on 300 cars if larger number is needed.

Locomotives Placed

Navy, one diesel-electric, to Atlas Car & Mfg. Co., Cleveland.

Locomotives Pending

Southern New York railway, one gasoline or diesel locomotive, 40 or 50 tons capacity.

Car Orders Placed

St. Louis Public Service Co., St. Louis, 100 street cars, to St. Louis Car Co., St. Louis.

Wilkes-Barre Railway Corp., Wilkes-Barre, Pa., nine trolley coaches, to J. G. Brill Co., Philadelphia.

Car Orders Pending

Minneapolis & St. Louis, 35 forty-ton automobile cars; bids asked.

Tennessee Coal, Iron & Railroad Co., 49 seventy-ton ore cars; under consideration.

Rail Orders Placed

Great Northern, 550 tons, to Carnegie-Illinois Steel Corp., Chicago.

Monongahela railroad, 1000 tons, to Carnegie-Illinois Steel Corp., Pittsburgh.

Buses Booked

American Car & Foundry Motors Co., New York: Ten 42-passenger for Houston Electric Co., Houston, Tex.; eight 36-passenger for Cincinnati Street Railway Co., Cincinnati; four 37-passenger for Florida Motor Lines Corp., Jacksonville, Fla.; four 35-passenger for A. E. Greenleaf, Washington; two 36-passenger for San Diego Electric Railway Co., San Diego, Calif.; two 37-passenger for Maine Central Transportation Co., Portland, Me.; two 39-passenger for Scranton Transit Co., Scranton, Pa.

Twin Coach Co., Kent, O.: Thirteen 21-

passenger for Duluth- Superior Transit Co., Duluth; ten 28-passenger for Canton City Lines, Canton, O.; seven 23-passenger for Carolina Power & Light Co., Raleigh, N. C.; seven 36-passenger for Cincinnati Street Railway Co., Cincinnati; five 40-passenger for Surface Transportation Co., Bronx, N. Y.; four 25-passenger for Northern Indiana Railway Inc., South Bend, Ind.; three 24-passenger for Carolina Power & Light Co., Asheville, N. C.; three 27-passenger for Menderson Bus Lines, Phoenix, Ariz.; two 23-passenger for Springfield Transportation Co., Springfield, Mo.; two 29-passenger for New Haven & Shore Lines, New London, Conn.; two 29-passenger for Schuylkill Valley Lines, Norristown, Pa.

Shapes

Structural Shape Prices, Page 66

Cleveland—Inquiries and awards are slow, but fairly heavy shipments remain to be made against previous orders. Principal pending job is the local municipal power plant, on which general contractor bids have been opened. Awards include 320 tons for the Glenville high school.

Chicago—Inquiries continue to lag, again being exceeded by awards. Government work is tapering but is expected to be offset at least in part by private construction. Among largest of pending jobs is 1000 tons for a state underpass at Avondale, La.

Boston—Bridge inquiry is slightly heavier, Vermont and Massachusetts closing Aug. 25 and 29, respectively, on several hundred tons, I-beam and stringer spans. Awards include a 150-ton bridge, Wallingford, Conn. Building construction is slack, although navy yard shops at Ports-

Wire

Wire Prices, Page 67

Pittsburgh—Wire is slightly more active in the merchant and manufacturers' markets. Auto partsmakers are taking larger tonnages, although releases from motor car plants are light. Agricultural demand is expected to be fairly good this fall, and warehouse stocks are being prepared for the buying season. Prices on merchant items are surprisingly steady.

Cleveland—Business and production lately have reached best levels so far this year, and the outlook remains favorable. Automotive needs are expected to expand wire consumption further in coming weeks, with a fairly active movement of merchant products in rural areas seen during late summer and fall.

New York—Continued improvement in demand for manufacturers' wire and well maintained buying of spring wire and specialties hold wire mill operations in the East around 60-65 per cent in finishing departments. Rope and heavier goods are slow. Wire rods are slightly more active.

Birmingham, Ala. — No perceptible slackening in wire demand is reported, farm sources accounting for the larger part. Outlook is considered favorable, especially since no excessive restocking has been in evidence.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 67

Specifications are fairly steady, but with heavier releases coming from automotive interests, sellers look for August business to top that of July. Railroad demand is quiet but counted on to improve next month. The same is true of farm equipment builders who lately have been buying less actively. Manufacturers are finding competition from bolt and nut distributors, the latter drawing from stocks acquired under current price levels.

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mouth, N. H., and Newport, R. I., will take a total of 800 tons.

New York—Bethlehem Steel Co., Bethlehem, Pa., is low on a Medical Center building, Jersey City, 2240 tons. The first subway inquiry in months is out for a Brooklyn section, closing Aug. 29 and taking 4500 tons. New inquiry is slightly heavier, including 660 tons for New York state bridges closing Aug. 30 at Albany.

Philadelphia — Structural buying includes 920 tons for a state viaduct in New Castle county, Delaware, and several others involving smaller tonnages.

Buffalo—Shape business is heavier, with the closing on recent inquiries. This is reflected in larger bookings by fabricators as well as by mills. Inquiries are lighter, however.

Seattle—Important projects have been awarded in recent weeks and pending business is smallest in several months. Shops have fair backlogs, although some plants have cleaned up contracts. Poole & McGonigle have been awarded 245 tons for a state bridge in Lewis county, Washington, and 200 tons for additions to hangars at McChord Field, Wash. For the latter project Truscon Steel Co. has booked 50 tons for doors and sashes.

San Francisco—Interest centers on bids just opened on 1700 tons for the Salt Creek bridge and 1200 tons for the O'Brien Creek bridge on the Central Valley project, Calif., on which American Bridge Co. is low for the former and Bethlehem Steel Co. for the latter. Awards aggregated 2614 tons and brought the total to date to 79,698 tons, compared with 84,352 tons a year ago.

St. Louis—St. Louis county shortly will choose an architect to draw plans for a Mississippi river bridge south of here. The span is to be 3540 feet long and will cost $3,500,000. Architects are preparing preliminary plans to be used in application for a $6,000,000 to $8,000,000 loan for slum clearance projects.

Shape Awards Compared

	Tons
Week ended Aug. 19	**14,241**
Week ended Aug. 12	**17,975**
Week ended Aug. 5	**16,866**
This week, 1938	**36,348**
Weekly average, year, 1938	**21,568**
Weekly average, 1939	**22,023**
Weekly average, July	**23,778**
Total to date, 1938	**587,069**
Total to date, 1939	**726,775**

Includes awards of 100 tons or more.

Shape Contracts Placed

2825 tons, Water street improvement No. 6, Pittsburgh, to American Bridge Co., Pittsburgh.

920 tons, state viaduct, New Castle county, Delaware, to Bethlehem Steel Co., Bethlehem, Pa.

850 tons, bureau of power and light underground headquarters, Los Angeles, to Bethlehem Steel Co., Bethlehem, Pa.

815 tons, bridge over Rock river, Galt, Ill., to Bethlehem Steel Co., Bethlehem, Pa.

500 tons, building for Continental-American Insurance Co., Wilmington, Del., to Belmont Iron Works, Philadelphia.

500 tons, addition to press building, Midvale Corp., Nicetown, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

375 tons, sheet piling, bulkhead, Fire Island, New York, to Carnegie-Illinois Steel Corp., Pittsburgh.

375 tons, continued treatment building No. 15, Kings Park hospital, Long Island, N. Y., to Belmont Iron Works, Philadelphia; Silverblatt & Lasker, New York, contractor.

369 tons, state highway bridge, Morrison, Okla., to J. B. Klein Iron & Foundry Co., Oklahoma City, Okla.

350 tons, tunnel ribs, schedule 56830, treasury department, Los Angeles, to unnamed interest.

320 tons, Glenville high school, Cleveland, to Ingalls Iron Works Co., Birmingham, Ala.

310 tons, railroad station, Texas & Pacific railroad, Longview, Tex., to Mosher Steel Co., Dallas, Tex.

310 tons, building, International Harvester Co., Cincinnati, to Gage Structural Steel Co., Chicago.

310 tons, freight shed, schedule 509, Mare Island, Calif., navy yard, to Bethlehem Steel Co., San Francisco.

296 tons, tunnel ribs, specification 861, Central Valley project, Calif., to unnamed interest.

255 tons, Stein Davies building, Long Island City, N. Y., to Schacht Steel Construction Co., New York; W. J. Barney Co., New York, contractor.

245 tons, state bridge, Lewis county, Washington, to Poole & McGonigle, Portland; Angeles Gravel & Supply Co., Port Angeles, Wash., general contractor.

240 tons, warehouse, Earle M. Jorgensen Co., Oakland, Calif., to Judson-Pacific Co., San Francisco.

235 tons, Rosenbaum elevator, Chicago, to Gage Structural Steel Co., Chicago.

215 tons, bridge over Santa Ana river, San Bernardio county, California, for state, to Minneapolis-Moline Power Implement Co., Minneapolis.

200 tons, sheet piling, state project RC-4045, Niagara county, New York, to Bethlehem Steel Co., Bethlehem, Pa.

200 tons, state bridge, contract 1820, Valparaiso, Ind., to Bethlehem Steel Co., Bethlehem, Pa.

200 tons, factory, Gardner-Denver Co., Quincy, Ill., to Michelmann Steel Construction Co., Quincy, Ill.

200 tons, hangar and barracks, coast guard air station, San Francisco, to Herrick Iron Works, Oakland, Calif.

200 tons, additions to army hangars, McChord Field, Wash., to Poole & McGonigle, Portland; Sound Construction & Engineering Co., Seattle, general contractor.

195 tons, Division street bridge, Youngstown, O., Mahoning county commissioners, to Hunter Construction Co., Youngstown.

182 tons, apartment house, San Fran-

cisco, to Golden Gate Iron Works, San Francisco.

180 tons, Fisk street substation, Commonwealth Edison Co., Chicago, to Vierling Steel Works, Chicago.

175 tons, receiving hospital building, Cleveland, for state, to Fort Pitt Bridge Works, Pittsburgh.

170 tons, precipitation building, Permante Cement Co., Los Altos, Calif., to Moore Drydock Co., Oakland, Calif.

150 tons, Hall avenue bridge, Quinnipaic river, Wallingford, Conn., to Bethlehem Steel Co., Bethlhem, Pa.; direct bid.

145 tons, bridge, route 65, section 151, Freeburg, Ill., to Missouri Bridge & Iron Co., St. Louis.

140 tons, power plant addition, Dannamora prison, New York, to Belmont Iron Works, Philadelphia, through D. E. O'Brien Co., Albany, N. Y.

140 tons, state bridges RC-4021 and RC-4046, Stephentown, N. Y., to American Bridge Co., Pittsburgh.

130 tons, building, Hawthornden hospital, Macedonia, O., for state, to Fort Pitt Bridge Works, Pittsburgh.

130 tons, punched channels for conveyor, Ford Motor Co., River Rouge, Mich., to Palmer Bee Co., Detroit.

125 tons, bridge 186F, Muhlenberg county, Kentucky, to Virginia Bridge Co., Roanoke, Va.

120 tons, addition, Vanadium Corp., Niagara Falls, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

115 tons, Montgomery Ward & Co., store, LaGrange, Ill., to Gage Structural Steel Co., Chicago.

115 tons, state bridge RC-4049, Fullers, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

105 tons, bridge section 20A, Cumberland county, Pennsylvania, to American Bridge Co., Pittsburgh; Johnson, Drake & Pipe Co., New York, contractor.

105 tons, 200-foot viaduct, Long Pine, Nebr., to Illinois Steel Bridge Co., Jacksonville, Ill.

104 tons, bridge in Douglas county, Colorado, to unnamed interest.

100 tons, city hall addition, Glens Falls, N. Y., to Ernst Iron Works Inc., Buffalo.

Shape Contracts Pending

2250 tons, building, medical center, Jersey City, N. J., Bethlehem Steel Co., Bethlehem, Pa., low; bids Aug. 15.

1700 tons, Salt Creek bridge, Central Valley project, Calif.; American Bridge Co., Pittsburgh, low.

1200 tons, O'Brien Creek bridge Central Valley project, California; Bethlehem Steel Co., San Francisco, low.

1000 tons, underpass, Avondale, Okla.; bids in.

900 tons, including 800 tons of piling, municipal power plant, Cleveland; Lombardo Bros. Construction Co., Cleveland, low for general contract.

800 tons, hangar, Kelly Field, Tex., for United States government.

778 tons, Bridge of Gods, Columbia river, Oregon; general contract to Tavares Construction Co., 210 West Seventh street, Los Angeles, at $438,543.

660 tons, state bridges, Allegany and Washington counties, New York; bids Aug. 30, Albany.

640 tons, power plant, for Ohio Edison Co., Steubenville, O.

600 tons, piling, bulkhead, state park, Erie, Pa.; bids Aug. 28.

550 tons, baking plant, for Paul Schulze Biscuit Co., Chicago.

500 tons, state highway bridge, Kribs, Okla.; bids in.

408 tons, Lankershim boulevard bridge for city Los Angeles; bids Aug. 23.

400 tons, reconstruction of bridge, Culver Rapid Transit railroad, Brooklyn, for city of New York.

360 tons, bridge 5872, Stephen, Minn.—Grafton, N. Dak., for state of Minnesota.

350 tons, reconstruction of bridge, E. 168th street, New York, for state.

350 tons, state bridge FAGH-8532, Edwards Station, N. Y.

325 tons, theatre building, for Metropolitan Life Insurance Co., Bronx, New York.

275 tons, extension to storehouses 2 and 4, naval magazine, Bellevue, D. C., for navy.

250 tons, state bridge, Monroe county, New York; Jodomar Inc., Rochester, N. Y., low.

230 tons, reconstruction of overhead bridge 3157, Chestnut street, Bowningtown, Pa., for Pennsylvania railroad.

230 tons, state bridge, Shaker road, Enfield, N. H.

200 tons, crane girders, navy yard, Brooklyn.

200 tons, school, Brentwood, N. Y.

200 tons, state bridge, Orange county, New York; John Arborio Inc., Poughkeepsie, N. Y., low.

200 tons, state bridge FAS-SS-39-12, Dutchess county, New York.

200 tons, school, Brentwood, Long Island, N. Y., for Union free school district.

178 tons, 99-foot I-beam bridge, Chester; 99-foot I-beam bridge, Brattleboro, and 84-foot I-beam bridge, Brandon, Vt., bids Aug. 25, H. E. Sargent, commissioner of highways, Montpelier, Vt.

175 tons, state bridge FAS-SS-39.13, Dover Plains, N. Y.

165 tons, warehouse, for Wheeling Steel Corp., Martins Ferry, O.

165 tons, bridges 154 and 155, Zinc, Ark., for Missouri Pacific railroad.

150 tons, office and factory, for Metropolitan Refining Co., Long Island City, N. Y.

150 tons, diocesan building, Newark, N. J.

125 tons, extension to mill building, National Lead Co., Sayreville, N. J.

125 tons, state bridge, Allegheny county, New York; Hornell Construction Co., Hornell, N. Y., low.

125 tons, pumping station, Wilkes-Barre, Pa., for army engineers.

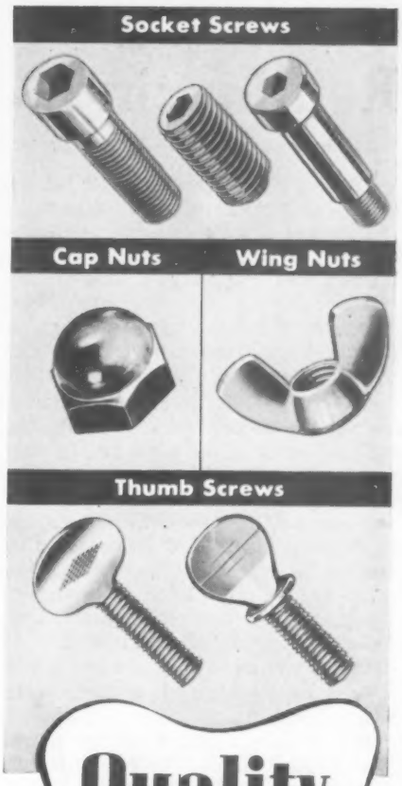
125 tons, tank house, for Brooklyne Chemical Works, Baltimore.

125 tons, powerhouse extension, Philadelphia Electric Co., Chester, Pa.

Tin Plate

Tin Plate Prices, Page 66

Tin plate production is down 3 points to 65 per cent. While a decrease at this time is normal, the letdown has been slower than usual because specifications for general line cans have been better than expected. This business plus steady export demand and a fair volume of sanitary can needs, have held operations relatively high.



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WING NUTS · CAP NUTS
THUMB SCREWS
SOLD THROUGH REPUTABLE DISTRIBUTORS

Reinforcing

Reinforcing Bar Prices, Page 67

Pittsburgh — Reinforcing bar prices generally are established on the newly announced basis. Some dissension has been heard from buyers and warehouses, but the revised card is expected to hold. Meanwhile, considerable tonnage is pending, and new jobs are appearing in fair volume.

Chicago — Market still features numerous small jobs pending as well as substantial tonnages in subway and housing work. Thompson-Starrett Co., general contractor for the largest Chicago housing project, is expected to award 2900 tons this week. New prices effective Aug. 10 now are being quoted and rigidly maintained, producers report. Outlook is bright for maintenance of demand the next few weeks.

Boston—Reinforcing steel contracts are few, the bulk of buying being for small lots. A sewage plant, Springfield, Mass., and a viaduct, Providence, R. I., take several hundred tons, both being included among awards. Prices on concrete bars are steadier at newly listed quotations, but have been subjected to little test.

Philadelphia — Reinforcing bar business is quiet and prices are showing a firmer tendency.

San Francisco—Among larger lettings were 211 tons for an auditorium for George Washington high school, San Francisco, 201 tons for six bridges in Lassen county, Calif., for the state, and 100 tons for a music and shop building for the San Mateo, Calif., high school. Awards totaled 1602 tons and brought the year's aggregate to 104,333 tons, compared with 76,154 tons for the same period last year.

Reinforcing Steel Awards

600 tons, Fisk street substation, Commonwealth Edison Co., Chicago, to Truscon Steel Co., Youngstown.

600 tons, housing project, Trenton, N. J., to Sweets Steel Co., Williamsport, Pa.; Karno-Smith Co., Trenton, contractor.

250 tons, including 150 tons mesh, additions to McChord Field, Washington, hangars, to Truscon Steel Co., Youngstown, O.; Sound Construction & Engineering Co., Seattle, general contractor.

250 tons, factory, Reynolds Wire Co., Dixon, Ill., to Ceco Steel Products Corp., Cicero, Ill.

225 tons, building, Montgomery Ward & Co., Detroit, to Bethlehem Steel Co., Bethlehem, Pa.; O. W. Burke, contractor.

211 tons, auditorium, George Washington high school, San Francisco, to Herrick Iron Works, Oakland, Calif.

201 tons, six bridges in Lassen county, California, for state, to Palm Bridge & Iron Works, Sacramento, Calif.

200 tons, storage tanks, Procter & Gamble Co., Louisville, Ky., to Bethlehem Steel Co., Bethlehem, Pa.

150 tons, swimming pool, Massachusetts Institute of Technology, Cambridge, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; Aberthaw Co., Boston, contractor.

120 tons, Washburn vocational school, Chicago, to Calumet Steel Co., Chicago.

120 tons, Branch Brook housing, Newark, N. J., to Truscon Steel Co., Youngstown, O.; Leopold Neckerman, New York, contractor.

120 tons, building for Continental-American Insurance Co., Wilmington, Del., to Bethlehem Steel Co., Bethlehem, Pa.

110 tons, viaduct, Providence, R. I., to Truscon Steel Co., Youngstown, O.; Coleman Bros. Corp., Boston, contractor.

105 tons, sewage plant, Springfield, Mass., to National Steel Products Co., Elmwood, Conn.

100 tons, music and shop building, high school, San Mateo, Calif., to Truscon Steel Co., San Francisco.

100 tons, state overcrossing, Tacoma, Wash., to unstated interest.

Concrete Bars Compared

	Tons
Week ended Aug. 19	**3,462**
Week ended Aug. 12	**10,135**
Week ended Aug. 5	**11,775**
This week, 1938	**11,250**
Weekly average, year, 1938	**6,959**
Weekly average, 1939	**9,792**
Weekly average, July	**8,076**
Total to date, 1938	**223,673**
Total to date, 1939	**323,146**

Includes awards of 100 tons or more.

Reinforcing Steel Pending

3010 tons, United States Indian service, Parker, Ariz.; bids opened.

2470 tons, Jamaica sewage plant, South Ozone Park, New York; bids Aug. 24.

2000 tons, water intake, Toledo, O., Merritt-Chapman & Scott Co., New York, general contractor.

1300 tons, municipal power plant, Cleveland; Lombardo Bros. Construction Co., Cleveland, low for general contract.

1000 tons, (estimated), warehouse for Lit Bros., Philadelphia; Simon & Simon, Philadelphia, architects.

1000 tons, Municipal hospital, Pittsburgh; Fleisher Engineering & Construction Co., Buffalo, low bidder.

850 tons, mostly mesh, state highway projects, Delaware, Saratoga and Nassau counties, New York; bids Aug. 30.

716 tons, Lankershim Boulevard bridge, for Los Angeles; bids Aug. 23.

600 tons, Corlears Hook housing, New York.

561 tons, Norfolk navy yard, requisition 81 (1940) PWA, Portsmouth, Va.; bids Aug. 21.

500 tons, Rock creek diversion sewer, Piney branch, Washington.

483 tons, Abraham Lincoln school, San Francisco, general contract to Meyer Construction Co., 735 Portola drive, San Francisco at $484,124.

465 tons, contract MS-39-15, circumferential highway, Brooklyn, N. Y.; T. Tomasetti Co., New York, low.

250 tons, barracks, Pearl Harbor, T. H.; bids opened.

200 tons, canal locks, Deep Creek, Va., to South Mills, N. C.

150 tons, Diamond Portland Cement Co., Middlebranch, O.

125 tons, power plant, specification 9124, Pearl Harbor, T. H., bids Sept. 6.

125 tons, kitchen building, St. Louis city hospital; bids Aug. 15.

117 tons, warehouse for Fibreboard Co., Antioch, Calif.; bids opened.

107 tons, exchange building, Michigan

Bell Telephone Co., Bay City, Mich.

Unstated, two steel and concrete state bridges, Silver Bow county, Mont.; bids at Helena, Aug. 24.

Pig Iron

Pig Iron Prices, Page 68

Chicago — Shipments increased slightly the past week, now being about 13 per cent ahead of July. By-product foundry coke shipments show similar betterment. Sales of iron are being made steadily, but no general buying movement prevails. Price advance for fourth quarter is not expected. With foundries operating better because of automotive and miscellaneous demand further improvement in iron shipments may be noted this month. Prospects for September shipping are brighter.

Birmingham, Ala. — Merchant iron producers are somewhat more optimistic and report a slightly more active market. Melt is unchanged, with 14 stacks active.

St. Louis—Deliveries and consumption continue the steady upturn that started at mid-July. Stove and furnace interests are busier, and jobbing foundries have raised operations to near the best rate so far this year. Rumors of possible price advances next quarter are without confirmation.

Toronto, Ont.—Orders are heavier, exceeding 1000 tons for the week. Buying still is for prompt needs. The melt also is up slightly with the resumption by several plants recently down for a two-week holiday. Operations are about 60 per cent. Pig iron production is steady, five stacks blowing. Prices are firm.

New York — Specifications are about equal to the July average, despite a slight letdown in demand from jobbing plants. Orders are spotty. The tone of prices is improved, and sellers are attempting to obtain specifications against low-price contracts by the end of August.

Buffalo—Business and releases are heavier, the former being near the best level so far this year. Shipments are improved to foundries working on miscellaneous industrial castings, some plants stepping up operations to four and five days a week, compared with three days recently. Pig iron production remains at 64 per cent.

Boston—Buying is light and in small lots, though foundry operations show occasional gains. At least two malleable plants are busier.

Cleveland—Shipments retain a moderate margin over July, supporting previous expectations of at least a 10 per cent gain for all of August. Changes in foundry operations generally are for the better but are small. Production of automotive parts has yet to reach large volume.

Cincinnati—Shipments are steady, with orders light. Improvement in the melt is expected soon, particularly in automotive parts output.

Philadelphia—Releases are about holding their own. Better business is expected this fall. Tone of the market is strong, but few look for higher prices next quarter.

Scrap

Scrap Prices, Page 70

Pittsburgh—Heavy melting steel is steady, but prices of low phos grades and specialties continue to advance and borings and turnings are strong. Predictions are made of higher prices during the next 30 days, based on expansion in steelmaking and the absence of large lots of available scrap. However, operations are receiving support from synthetic scrap and from more extensive use of pig iron, and a rising market would be expected to bring out larger offerings of old material.

Toronto, Ont.—Trading is slightly more active, although low prices tend to curtail sales, and offerings still are below normal. Dealers anticipate higher prices and small sellers are holding accumulations.

St. Louis—The market is strong, though trading is confined to small lots. Dealers find some difficulty in covering recent mill purchases of No. 2 steel and cast scrap. Offerings from the country and by industries are light.

Cincinnati—The market is stronger, but quiet in mill buying is a factor in holding dealers' prices at previous levels. Mills are fairly well stocked but are accepting shipments against contracts. Dealers are holding accumulations in anticipation of a rise.

Detroit—Dealer sentiment is a trifle easier, and there is more disposition to sell tonnage now rather than hold for higher prices. A Fisher list closed last week brought approximately unchanged prices. Cast grades continue weak. Local mills are not inclined to enlarge scrap inventories.

Chicago—Scrap is quiet, with prices continuing strong. More brokers are paying $14 for No. 1 steel, compared with $13.75 which prevailed generally for some time. Some are reported to have paid $14.25 for large lots. Absence of trading in some grades gives a nominal value to prices.

Philadelphia — Export prices are

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higher, dealers now paying $15.50 to $15.75, Port Richmond, for No. 1 and $14.25 to $14.50 for No. 2. The advance is attributed to higher prices paid recently by Japan and also to increased competition from domestic mills. Delivered prices to domestic consumers are up on several grades.

Boston—Breakable and No. 1 machinery cast, forge flashings and skeleton are slightly firmer, the entire scrap list showing strength. Domestic shipments and buying are slightly more active. Buying against export orders is brisk at unchanged prices. The Worcester district steelworks is buying some heavy melting steel from nearby points at 25 to 50 cents under the price paid for dock delivery, Boston.

Cleveland—Trading is dull and prices are unchanged, though somewhat stronger. Cargoes continue to arrive by lake. Foundries are paying $1 above published quotations for immediate delivery on small lots of railroad steel.

Buffalo—Strength in the market is maintained, with cast iron borings and short shoveling turnings higher. About 2000 tons of No. 1 steel was sold at current prices. A strengthening factor is the decline in tonnage moving into dealers' yards, a situation believed caused by higher prices in the Pittsburgh district which are drawing scrap from nearby areas.

Nonferrous Metals

New York—Despite dullness which cloaked nonferrous metal markets last week, features of the period were two sudden spurts in activity. On Thursday sales of tin in the London and Singapore markets increased sharply while on Friday heavy continental demand, chiefly from Germany, boosted foreign copper sales well above the recent daily average.

Copper — After easing steadily during the week to 10.47½c, foreign copper strengthened on German buying with export closing at 10.60c, the week's high. The producers' market held steady here at 10.50c, Connecticut. World stocks of refined copper declined 23,251 tons during July, including 18,469 tons in this country.

Lead—Sales declined below the intake level but prices held at 4.90c, East St. Louis.

Zinc — Prime western held unchanged at 4.75c, East St. Louis, although the foreign price was still competitive by 20 to 25 points at seaboard ports. Sellers were encouraged by the rise in galvanized sheet output to 62 per cent, the high for 1939.

Tin—Standard spot tin remained pegged by the buffer pool executive at £229 17s 6d which confined fluctuations in the domestic market within narrow limits. Straits spot closed at around 48.75c.

Ferroalloys

Ferroalloy Prices, Page 68

New York—Possibility is seen that August shipments of domestic ferromanganese will be the heaviest of the year to date. March was the previous peak. Prices are unchanged, and it is too early to tell what quotations may be named for fourth quarter.

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Die Blocks & Piston Rods

NATIONAL FORGE AND ORDNANCE COMPANY

IRVINE, WARREN COUNTY, PENNA.

Nonferrous Metal Prices

Aug.	Copper Electro, del. Conn.	Copper Lake, del. Midwest	Copper Casting, refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot, N.Y.	Nickel Cathodes
12	10.50	10.50	10.12½	48.70	48.45	5.05	4.90	4.75	20.00	12.00	35.00
14	10.50	10.50	10.12½	48.75	48.50	5.05	4.90	4.75	20.00	12.00	35.00
15	10.50	10.50	10.12½	48.75	48.50	5.05	4.90	4.75	20.00	12.00	35.00
16	10.50	10.50	10.12½	48.75	48.45	5.05	4.90	4.75	20.00	12.00	35.00
17	10.50	10.50	10.12½	48.75	48.45	5.05	4.90	4.75	20.00	12.00	35.00
18	10.50	10.50	10.12½	48.85	48.50	5.05	4.90	4.75	20.00	12.00	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb., except as specified. Copper brass products based on 10.50c Conn. copper

Sheets

Yellow brass (high)	16.85
Copper, hot rolled	18.62
Lead, cut to jobbers	8.30
Zinc, 100 lb. base	9.75

Tubes

High yellow brass	19.60
Seamless copper	19.12

Rods

High yellow brass	12.19
Copper, hot rolled	15.12

Anodes

Copper, untrimmed	15.87

Wire

Yellow brass (high)	17.10

OLD METALS

Nom. Del. Buying Prices

No. 1 Composition Red Brass

New York	6.12½-6.37½
Cleveland	6.75-7.00
Chicago	6.37½-6.62½
St. Louis	6.37½-6.62½

Heavy Copper and Wire

New York, No. 1	8.12½-8.25
Cleveland, No. 1	8.00-8.25
Chicago, No. 1	8.00-8.25
St. Louis	7.87½-8.12½

Composition Brass Turnings

New York	5.37½-5.62½

Light Copper

New York	6.62½-6.87½
Cleveland	6.25-6.50
Chicago	6.37½-6.62½
St. Louis	6.37½-6.62½

Light Brass

Cleveland	3.75-4.00
Chicago	4.12½-4.37½
St. Louis	3.87½-4.12½

Lead

New York	4.20-4.45
Cleveland	4.00-4.25
Chicago	4.00-4.10
St. Louis	3.60-3.85

Zinc

New York	2.70-2.75
Cleveland	2.25-2.50
St. Louis	2.25-2.50

Aluminum

Mixed, cast, Cleveland	7.75-8.00
Borings, Cleveland	6.25-6.50
Clips, soft, Cleveland	14.75-15.00
Misc. cast, St. Louis	7.00-7.25

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads	10.75
Standard No. 12 aluminum	11.75-12.25

Warehouse

Warehouse Prices, Page 69

Chicago—Sales were off slightly last week, although this is a common seasonal trend. No protracted letdown is indicated, warehouses looking for a definite pickup in September.

Detroit—August sales are maintaining the July pace, but the outlook is clouded. Completion of major tool and die programs is expected to be followed by quieter warehouse business. Prices of some items, including galvanized sheets, are unsettled.

Buffalo—Business lately has been better than expected, headed by alloy and stainless steel products. Prices generally are steady.

Cincinnati—Demand has fluctuated within a narrow range so far this month, and August as a whole is expected to approximate July business. Small-lot orders for building products are an important sustaining factor.

Cleveland—Buying is steady, in some cases slightly better than a month ago. Only small change is expected for August as a whole, but some improvement is expected in September.

Iron Ore

Iron Ore Prices, Page 70

Cleveland—With the addition of 26 more vessels between July 15 and Aug. 15 to the list of those engaged in the ore trade on the Great Lakes, the number of active units as of the latter date was 114.5 per cent larger than a year ago, according to statistics released by the M. A. Hanna Co. Number of ore boats in commission Aug. 15 was 230, or 76.16 per cent of the total. This compares with 125 vessels, or 40.85 per cent of the total, a year ago. On July 15, 68.21 per cent were in commission.

Steel in Europe

Foreign Steel Prices, Page 69

London — (*By Radio*) — Steel ingot production in Great Britain in July was 22,500 gross tons less than in June, declining from 1,175,600 tons to 1,153,100 tons. Pig iron output in July was 743,600 tons, a gain of 27,800 tons over 715,800 tons in June. Steel and iron imports in July were 220,656 tons, 20,746 tons above June; imports in July, 177,226 tons, 12,026 more than in June.

All departments of the iron and steel industry are fully active, except in foundry iron, owing to continued slackness in the castings industry. Substantial imports supplement domestic semifinished output. Sheetmakers are booked several months ahead. Export trade is generally limited.

Equipment

Chicago—Machinery business has slowed. First half of the month was fairly good, but little is expected of the last half, traditionally dull. Definite pickup is in sight after Labor Day, however. Large machinery is reported moving better than a few weeks ago, but not sufficiently to offset a decline in sales of small tools. Inquiries are fairly steady.

Seattle — Seasonal requirements generally have been placed and dealers report business confined to unimportant items. Bonneville authority, Portland, has awarded its larger contracts. Bids are in to that office for telephone terminal equipment and for rental of crawler tractors. Denver is considering bids submitted Aug. 15 for various equipment items for the Coulee power plant.

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Construction and Enterprise

Michigan

BATTLE CREEK, MICH.—Lewis J. Sarvis, Battle Creek architect, is preparing plans for a new boiler house, heating plant and coal storage addition, to be erected in Lakeview, for the board of education.

BELDING, MICH.—Murray Corp. of America, 7700 Russell street, Detroit, has leased the White Mill building here for the manufacture of automobile seat cushion springs. New equipment will be installed and the Belding unit is expected to be ready for operations about Jan. 1.

DETROIT—Eureka Foundry Co., 2977 Wight street, has been organized to operate a foundry; Harvey Elliott, 9303 East Jefferson avenue.

DETROIT—Steel Tank Corp., 1903 Dime Bank building, has been formed to manufacture fabricated products; John Haller, 9214 Hartwell avenue.

DETROIT—Vibration Instruments Corp. has been organized to manufacture machine parts and accessories; C. M. Rifenbergh, 12052 Pinehurst avenue.

DETROIT—American Metal Products Co., 5959 Linsdale avenue, Detroit, has awarded contract to Bryant & Detwiler Co., Detroit, for constructing an addition to its factory.

FLINT, MICH.—George Hawes, architect, Flint, is preparing plans for construction of an office and shop building here for the Rohmans Ornamental Iron Works.

MILAN, MICH.—American Boiler & Foundry Co. has completed plans for erection of an addition, 90 x 100 feet, to its plant, to be used as a molding room.

Massachusetts

INDIAN ORCHARD, MASS.—Monsanto Co., 600 Worcester street, J. C. Brooks, vice president, proposes erection of laboratory, to cost about $125,000.

New York

BUFFALO—Buffalo Niagara Electric Corp. has approved plans for new power substation on Elmwood avenue, and will begin construction this month.

Ohio

ASHTABULA, O.—City, Tom R. Bailey, city manager, has been authorized by city council to advertise for bids for one caterpillar tractor for use in WPA projects.

CINCINNATI—United Biscuit Co. of America Inc., 1041 West Harrison street, Chicago, plans installation of motors and controls, conveyors, loaders and other equipment in new branch plant here. A power house will be built. Cost estimated over $1,500,000.

EUCLID, O.—City, M. A. Spino, service director, City hall, 585 East 222nd street, will take bids due noon, Aug. 25, for one new or used air compressor, for use in street department, per specifications on file with service director.

PORT CLINTON, O.—Village, Fred W. Slauterbeck, mayor, Harry R. Nissen, clerk, proposes new sewage disposal plant and sanitary system. Estimated cost $350,000. Finkbeiner & Associates, 725 Nicholas building, Toledo, O., consulting engineers.

SANDUSKY, O.—City, Robert L. J. Wagar, city manager, will take bids Aug. 30, noon, for 9000 pounds of ⅞-inch iron pins, 36 inches long, one end pointed, other end squared off for driving.

VERMILION, O.—R. F. MacDowell, consulting engineer, Chester-Twelfth building, Cleveland, has been retained to make preliminary investigation and report on proposed sewage system and disposal plant. Approximate cost $75,000.

Illinois

CHICAGO — Wishnick-Tumpeer Inc., maker of chemicals, pigments and oils, 365 East Illinois street, proposes erection of factory, to cost about $150,000.

MOLINE, ILL. — John Deere Plow Works, L. A. Murphy, manager, has awarded contract to A. Sugarman, 919 North Michigan avenue, Chicago, for construction of a 5-story factory, 94 x 150 feet, to be used as an experimental building, housing machine shop, tool room, and experimental department.

QUINCY, ILL.—Adams Electrical Cooperative, Roy L. Sharrow, president, has been allotted REA fund of $170,000 to build 154 miles of transmission lines.

WESTMONT, ILL. — Western United Gas & Electric Co., Aurora, Ill., has plans maturing for new power substation here, on which bids will soon be asked.

Indiana

INDIANAPOLIS — Allison Engineering Co., manufacturer of aircraft engines and parts, a division of General Motors Corp., Detroit, plans installation of motors and controls, switchgear, conveyors and other equipment in new 1 and 2-story addition, 138 x 155 feet, to be used as testing laboratory. Cost estimated at $200,000. This is part of the $5,000,000 expansion and improvement program to be carried out at this plant.

Arkansas

PINE BLUFF, ARK.—Arkansas Power & Light Corp., Harvey C. Couch, president, expects to start erection early in September of hydroelectric dam and power plant. Cost from $6,000,000 to $8,000,000.

Wisconsin

MILWAUKEE—Wisconsin Electric Power Co. has filed application with Wisconsin Public Service commission, Madison, Wis., for authority to make expenditures for a $4,137,000 program for new equipment at the Commerce street power plant here. Program calls for a 35,000-kilowatt turbogenerator and a high pressure boiler. A new building will be erected to house the boiler and will be 79 x 134 x 110 feet, with two-story wing for machine shop and office space.

Minnesota

LAKEFIELD, MINN.—City, E. P. Whitney, clerk, plans construction of sewage disposal plant and sewers.

LUVERNE, MINN.—City, C. H. Hazzard, clerk, is drawing plans for installation of 600-kilowatt diesel power generator in its municipal power plant which, with a 20,000-gallon fuel tank, will cost about $67,860.

MINNEAPOLIS—Rao Mfg. Co., R. A. Olsen, president, manufacturer of metal specialties, has awarded contracts for construction of a 1-story factory addition, 30 x 58 feet.

MINNEAPOLIS—W. H. Barber Co. has awarded contract to Maurice Schumacher, Baker building, for construction of 1-story warehouse and oil storage building, 60 x 203 feet, to cost $75,000.

PIPESTONE, MINN. — Southwestern Minnesota Electric Co-operative, Roy Butman, secretary, will open bids Aug. 25 for construction of 150 miles of rural electric transmission lines. Ellerbe & Co., First National Bank building, St. Paul, engineer.

SLEEPY EYE, MINN.—REA has allotted $128,000 to the Brown County Rural Electric association, H. A. Rosseth, superintendent, to finance construction of 127 miles of rural transmission lines.

SOUTH ST. PAUL, MINN.—City, John F. O'Donnell, city recorder, is taking bids to Aug. 29, 8 p.m., on construction of rock filter sewage treatment plant and intercepting sewer structures. Consoer, Townsend & Quinlan, 211 West Wacker drive, Chicago, consulting engineer. Certified check of 5 per cent to accompany bid.

SPRINGFIELD, MINN.—City, A. C. Mueller, clerk, is taking bids to Aug. 30 for furnishing piping and equipment, electrical construction and foundation for

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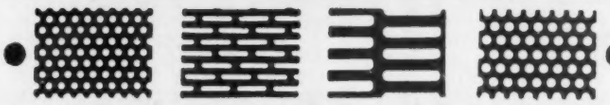

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turbine, condenser, pumps and other incidental work. Charles Foster, Duluth, is consulting engineer. Certified check of 5 per cent to accompany bid.

ST. PAUL—St. Paul Machine Works, 123 Kellogg street, has been incorporated to operate a general machine shop business, by G. P. Kahlert, C. H. Melancon and John Blomquist.

WILMAR, MINN.—REA has allotted $275,000 to the Kandiyohi Electric Cooperative, J. Mauritz Nelson, superintendent, to finance construction of about 314 miles of rural transmission lines.

Texas

AUSTIN, TEX.—WPA allotment of $56,000 has been approved for improvements to water distribution system. Total cost $100,000.

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CASS AT BAGLEY AVE. GARAGE IN CONNECTION

CORPUS CHRISTI, TEX. — Central Power & Light Co., Lon C. Hill, president, proposes power plant, with initial capacity three times that of local plant.

HOUSTON, TEX.—City, J. M. Nagle, director of public works, is having plans prepared for 90-foot diameter clarifier and for removal equipment; estimated cost $60,000; bids Sept. 15.

HOUSTON, TEX.—H. C. Cockburn, 3201 University, has acquired 100-acre site for erection of processing plant to treat iron ore by new natural gas smelting method. Construction will start within four months, capacity of first unit to be 100 tons of pig iron daily.

North Dakota

KINDRED, N. DAK.—Cass County Electric Co-operative, Max Strehlow, superintendent, will appoint an engineer soon to draw plans for construction of 150 miles of rural transmission lines. Cost about $150,000.

MINOT, N. DAK.—State board of higher education, R. B. Murphy, secretary, Bismarck, N. Dak., has specifications and is taking bids to Aug. 28, 2 p.m., on pumps for power house .William F. Kurke, Fargo, N. Dak., architect. Certified check of 5 per cent to accompany bid.

South Dakota

BROOKINGS, S. DAK.—Sioux Valley Electric association, E. G. Sanderson, president, has been allotted $356,000 REA funds to finance construction of 350 miles of transmission lines.

RAPID CITY, S. DAK.—Oliver Machine Works, Roy Oliver, proprietor, has awarded contract to Ed O'Haver for construction of 1-story machine shop, 40 x 96 feet.

SIOUX FALLS, S. DAK.—REA has allotted $390,000 to Empire Electric association, L. W. Ellefson, president, to finance construction of about 365 miles of rural transmission lines.

Nebraska

ANSLEY, NEBR.—City has completed plans and will soon take bids on construction of wells, pumps, pump houses and water mains at its waterworks plant. E. H. Dunmire, 1802 B street, Lincoln, Nebr., consulting engineer.

MADISON, NEBR.—State railway commission has granted authority to Madison County Rural Public Power district, A. H. Lewis, superintendent, to construct 273 miles of rural transmission lines.

STANTON, NEBR.—Stanton County Rural Public Power district, Peter H. Claussen, president, is preparing plans for construction of about 150 miles of rural transmission lines to cost about $155,000. Putnam & Woolpert, Dayton, O., consulting engineers.

Iowa

CEDAR RAPIDS, IOWA — Link-Belt Speeder Corp., manufacturer of power shovels, draglines, cranes and track-type locomotive cranes, has begun construction of factory addition to increase facilities by 25 per cent.

CHEROKEE, IOWA—REA has allotted $125,000 to Cherokee County Rural Electric Co-operative, Thomas G. Dull, superintendent, to finance construction of about 122 miles of rural transmission lines.

GREENFIELD, IOWA—City has appointed Max Stanley, Muscatine, Iowa, as consulting engineer to work out program for improvements at municipal power plant to cost about $92,500.

OTTUMWA, IOWA—Clausing Mfg. Co., Paul L. Clausing, president, has been incorporated to manufacture precision machinery.

STORM LAKE, IOWA—Iowa Public Service Co., Sioux City, Iowa, plans to enlarge its power plant, doubling present power capacity.

WELLMAN, IOWA—City has appointed Green Engineering Co., 417 First avenue, Cedar Rapids, Iowa, as consulting engineer to prepare plans for construction of sewage disposal plant to replace present unit.

WATERLOO, IOWA—Waterloo Welding Co., Leo R. Schleusner, proprietor, plans construction of 1-story welding shop, 50 x 60 feet.

WATERLOO, IOWA—Floyd E. Cole has started construction of 1-story boiler manufacturing plant, 40 x 100 feet, at 211 Rath street.

WATERLOO, IOWA—Hawkeye Steel Products Co., M. H. Lorenzen, president, has begun construction of 1-story factory addition, 32 x 208 feet. David B. Toenjes, Black Hawk building, is architect.

Montana

FORSYTH, MONT.—City, H. V. Beeman, clerk, will consider a project calling for construction of municipal light and power plant.

MISSOULA, MONT.—REA has allotted $110,000 to Missoula County Electric association, L. A. Howland, superintendent, to finance construction of about 90 miles of rural transmission lines.

SWEETGRASS, MONT.—Sweetgrass Oil & Refining Co. plans construction of an oil refinery with capacity of 600 barrels daily. V. C. Langford, Sheridan, Wyo., is among those interested in the enterprise.

Idaho

BOISE, IDAHO—Sawtooth Co. sustained considerable damage to its heavy mining machinery by fire.

Pacific Coast

LOS ANGELES—Chrysler Corp., 341 Massachusetts avenue, Detroit, has approved plans for two additions, 160 x 280 and 160 x 260 feet to branch automobile assemby plant here. Cost over $175,000. (Noted June 26).

CENTRALIA, WASH.—Saw and planing mills of Eastern Railway & Lumber Co.; blacksmith shop of Centralia Foundry Co., and plant of Driscoll Boiler Works sustained severe damages by fire Aug. 6.

KLAMATH FALLS, OREG.—A. P. Heup, manager, Western Pine lumber mill, at Bly, Oreg., proposes to rebuild plant recently destroyed by fire.

LONGVIEW, WASH.—Port of Longview is considering doubling capacity of public grain elevators leased to Continental Grain Co., requiring new buildings and equipment.

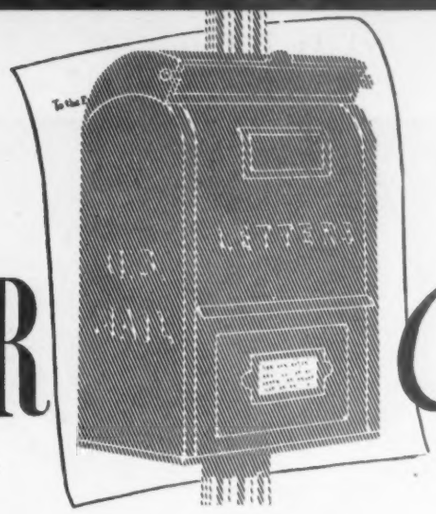
SEATTLE—Plant and equipment of Washington Excelsior & Mfg. Co. were recently damaged by fire.

VANCOUVER, WASH.—W. G. Hedge, president, Vancouver Iron & Steel Foundry, whose plant was recently destroyed by fire, announces plans by D. W. Hilborn, Vancouver, for erection of $10,000 building, and will install new equipment at cost of $15,000.

Canada

VANCOUVER, B. C.—Spiro Engines Ltd., 101 Royal Trust building, will build a plant at a cost of $50,000.

VICTORIA, B. C.—Herculoude Aircraft of Canada Ltd., M. E. Heiser, general manager, proposes erection of factory. Estimated cost $150,000.



READER Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

"Splendid Summing up"

To the Editor:

I believe your editorial entitled "Looking Forward to 1940" (STEEL, Aug. 14, p. 34) sums up splendidly the situation that confronts us, and that the advice you offer should be heeded by all industrialists, at least.

The questions you ask in your second paragraph are hard to answer, but in the main, I do feel a little more confident concerning the direction in which we are headed for the immediate future.

Congress, to some slight measure, has exerted its independence. That is the only phase offering much encouragement, but we must not forget that they have to combat the strategy of a very able ward-heeling type of politician, not a statesman, who refuses to remain very long on the defensive, so it is largely anybody's guess how this battle will terminate.

I think the voters, as a mass, are still gullible and I feel they are not ready yet to face and accept cold facts and realities.

F. E. MOORE

President,
Mathews Conveyer Co.,
Ellwood City, Pa.

"Revolt Largely Political"

To the Editor:

I think our views of the action of congress in its closing days, are not greatly at variance with most of industry and, in fact, with your own editorial on this subject (STEEL, Aug. 14, p. 34).

We feel that the sudden revolt arose very largely from political causes and by no means demonstrates any marked change of attitude either on the part of congress or the executive. It certainly will involve no change in our plan over the period of the next several months and we question, after the early reactions are passed, whether it will have any notable effect on business. Our expectation is that the general trend of business will continue sidewise until some definite change in political philosophy is evident at Washington.

The machine tool industry naturally is moving along at an abnormal rate, but almost entirely as a consequence of the artificial markets. Without the defense activity of our own government and that of foreign governments, the volume would be dangerously low.

Meanwhile, we are proceeding in the hope that the next several months will be more convincing in their evidence of a change of political front.

CLIFFORD S. STILWELL

Vice President,
The Warner & Swasey Co.,
Cleveland.

"Constructive and Helpful"

To the Editor:

Our reaction to the activities of the 1939 congress, briefly is as follows:

Compared to previous new deal meetings, the few things that they did and the things they did not do should prove constructive and helpful to business. While this has not been immediately reflected in our case, it has encouraged us to go ahead with a modest expansion program; including the purchase of additional land and buildings and the purchase of some new machinery.

We view with alarm the ever-increasing public debt, but feel that the action of the house in throwing out the President's spending program, is an indication that the pendulum is about to swing the other way and that congress is becoming aware of the fallacy of the spend-for-prosperity theory, this view being shared by an increasing number of thinking voters.

If such be the case, we believe that barring a major war in Europe, business is due for steady improvement, slow perhaps, but sound, continuing for a considerable period.

J. H. VAN SCIVER

President,
Bethlehem Foundry & Machine Co.,
Bethlehem, Pa.

Too Early for Results

To the Editor:

It is my feeling that the congressional change of front will be encouraging to business. While there has been nothing discouraging in our business since congress adjourned, yet I have a feeling that it is a little early to get a real impression.

DAVID C. GRIGGS

President,
Waterbury Farrel Foundry & Machine Co.,
Waterbury, Conn.

"End of Jitterbug Economics?"

To the Editor:

We believe we may now hope for the end of jitterbug economics, indicated by action of the recent congress.

We were surprised and delighted at the action of congress at the close of the session.

R. H. THOMAS

President,
Economy Pumps Inc.,
Hamilton, O.

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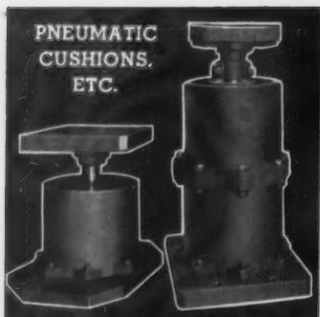
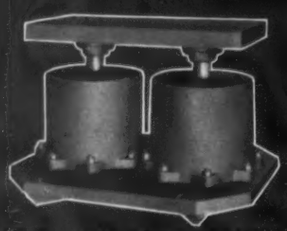
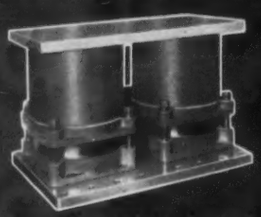


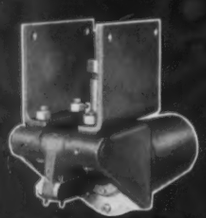
Single and double stage cushions.



Two single stage cushions mounted together.



Two self contained cushions, operate without surge tank.



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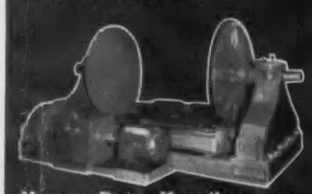

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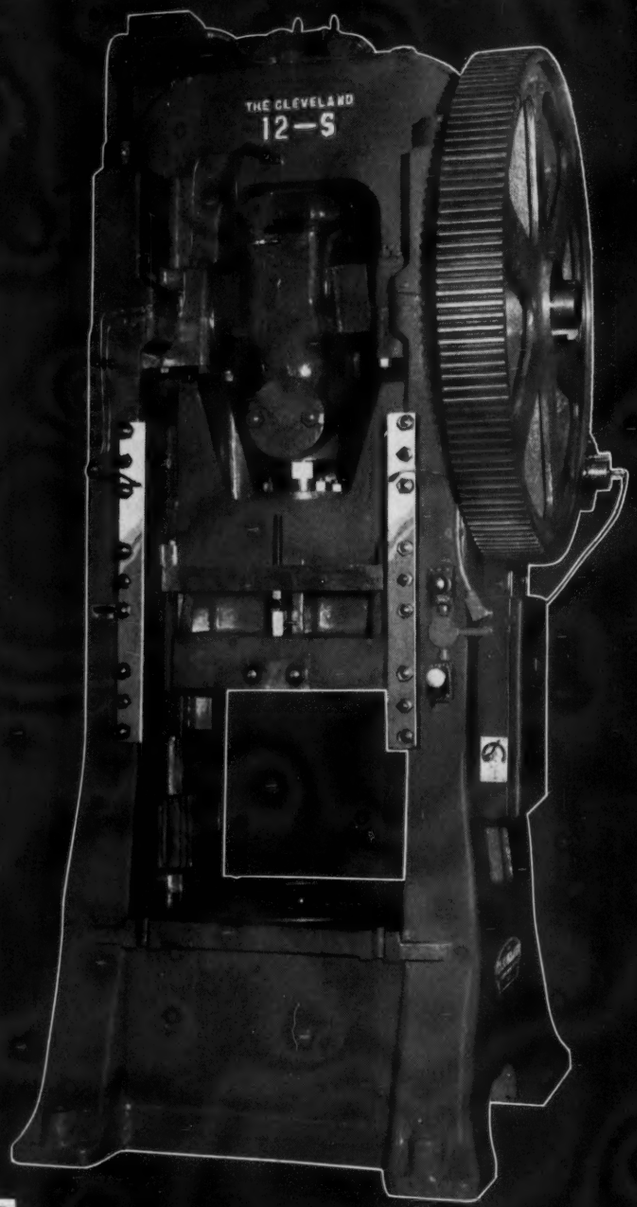

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